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U. S. To Study Converted Paper Industry

Administrator Wage and Hour Division of Department of Labor Orders Study To Serve As Basis of Minimum Wage Rate—Committees To Be Appointed For Publishing and Printing Trades.

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., Aug. 26, 1942—At the request of both employers and employee organizations a new study of the converted paper products industry as a basis of fixing a minimum wage rate for the industry was ordered today by L. Metcalfe Walling, Administrator of the Wage and Hour Division, U. S. Department of Labor. Mr. Walling also announced that within two or three weeks he will appoint an industry committee for the printing, publishing and allied graphic arts industry.

The new study of the converted paper products industry will be carried out by a 21-man industry committee appointed by the Administrator. The Committee will meet at 10 A. M. Wednesday, Sept. 9, 1942, in the College Room of the Hotel Astor, New York City, with Mr. William E. Simkin acting as chairman. The original committee recommended the present minimum wage scales of 40, 38, and 36 cents an hour under which the industry has been operating, by wage order, since June 30, 1941.

Will Investigate Low Pay Divisions

The Committee is expected to give special consideration to those divisions of the industry for which minimum wage rates of less than 40 cents an hour are now prescribed. Now in requesting the new study, certain employers and employees indicated that the wage order establishing three different minimum rates has raised difficulties in administration since many plants manufacture products covered by more than one of the rates.

The same definition of the industry which guided the first committee will be used by the new committee, except that the manufacture of wallpaper is included in the new definition. The industry consists of some 2,120 separate establishments, employing about 200,000 workers, more than a third of whom are girls and women.

Minimum Wage Order Affects Many Concerns

The 40-cents an hour minimum, which is the highest that may be established, by wage order, now applies to the manufacture of the following products: Folding paper boxes; shipping containers; paper cups; bottle caps and hoods; waxed papers; waterproof paper; glazed and fancy papers; commercial envelopes; tags and labels; gummed papers; carbon paper; towels and toilet tissues; auto panels; photo mountings; die cut specialties; sensitized papers; sand paper; loose-leaf and blank books, tablets and pads, and index cards; stationery; playing cards; book matches; all other products in which the principal basic component consists of synthetic materials; all other products made by the coating or impregnating of paper or paper board with any material.

The 38-cent minimum applies to workers engaged in the manufacture of: Shipping sacks; paper bags; miscellaneous rolls and wrapping specialties; products not elsewhere classified.

The 36-cent minimum covers the manufacture of: Set-up boxes; cans, tubes, cores and related products; expanding envelopes and related products; plain rolls; lace and fluted paper products; twisted paper products.

Membership of the Group Committees

Members of the committee are: For the Public; William E. Simkin, Philadelphia, Pa., Thomas L. Norton, Buffalo, N. Y., Tipton R. Snavely, Charlottesville, Va., William John Wilgus, Ascutney, Vt., Edgar M. Hoover, Jr., Washington, D. C., John A. Lapp, Chicago, Ill., Joseph M. Klamon, St. Louis, Mo.

For the Employees: Frank Grasso, New York, Burt J. Mason, Chicago, Ill., Earl Taylor, Toledo, Ohio, Homer L. Humble, Pritchard, Ala., Harriet Wray, New York, C. V. Ernest, Baltimore, Md., Boris Shiskin, Washington, D. C.

For the Employers: A. R. Leiserson, Richmond, Va., Allan K. Schleicher, St. Louis, Mo., Ralph A. Hayward, Kalamazoo, Mich., James L. Coker, Hartsville, S. C., E. V. Johnson, Springfield, Mass., Walter F. Lipford, Richmond, Va., and Emory R. Betham, Cleveland, Ohio.

Nekoosa-Edwards Purchases Timber Tract

Company Announces Acquisition of 440 Acres of Pine and Fir Timber Land — John S. Sensenbrenner Resigns From Kimberly-Clark Corp. — Paper Men Are Granted Patents — Other News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., August 24, 1942—Purchase by the Nekoosa-Edwards Paper Company, Port Edwards, Wis., of the timber on a 440-acre tract of land in the town of Alban, Portage County, Wis., was announced last week. The price paid was $20,000. The tract contains mostly pine and fir varieties, and was owned by Mr. and Mrs. Bernard Liebe.

J. S. Sensenbrenner Resigns

John S. Sensenbrenner, vice-president, sales manager and member of the executive committee of the Kimberly-Clark Corporation, Neenah, Wis., announced his resignation Tuesday of last week. He had been active in the business for thirty years. He had had the resignation under consideration for some time in view of other business interests, he said, but had delayed action on it at the request of his associates. Mr. Sensenbrenner will continue his membership on the board of directors.

Paper Men Granted Patents

Three patents were granted Wisconsin men recently. Two of them were issued to John G. Meiler, a chemist at the Marathon Paper Mills Company, Rothschild, Wis. They embody methods of treating lignocellulosic material and products produced thereby. His first application November 14, 1941, gave him credit for eight new ideas, and a second application November 19, 1941 embodies ten claims for originality. The patent rights have been assigned to the Marathon company for manufacture and exploitation.

John R. Fanselow, director of the control laboratory of Kimberly-Clark Corporation at Neenah, Wis., has been granted a patent on a method and apparatus for coating sheet material. He has assigned the patent to the K. C. M. Company.

Minnesota Co. Ordered to Pay Taxes

The Minnesota Mining and Manufacturing Company, which manufactures abrasive paper at a branch plant at Wausau, Wis., has been ordered by Circuit Judge Alvin Reis of Madison, Wis., to pay privilege dividend taxes of $14,565 from 1936 through 1940. Payment was withheld during a test case brought by the J. C. Penney Company, in which the Wisconsin Supreme Court declared the law unconstitutional. It requires payment of the tax by out-of-state corporations in Wisconsin. The United States Supreme Court reversed the state court's decision, and the latter then held the law was constitutional but disagreed with the federal court's definition of it. Judge Reis declared that since both courts upheld the law, he would do so also.

A. J. Wiley to Work on Stream Pollution

Averill J. Wiley of Spokane, Wash., will assist the Wisconsin Sulphite Pulp Manufacturers Committee in its program to eliminate stream pollution through discharge of waste sulphite liquor. He has been named to do research work at the Institute of Paper Chemistry, Appleton, Wis., where experiments are being conducted in cooperation with the Committee. Mr. Wiley has a process for which he claims great promise in treating sulphite liquor, and his appointment was announced by Jesse Holderby, committee representative, after an investigation of the process. He was assistant bacteriologist for the City of Spokane.

The War Production Board's recent refusal to a request of the committee to build a pilot plant at the Interlake Pulp and Paper Company mill at Appleton, Wis., to test out a process, was discussed by the committee at a meeting at Neenah, Wis., August 14. The committee plans to postpone this project until after the war. Members attending were: J. M. Conway, Hoberg Paper Mills, Inc., Green Bay, chairman; Ernst Mahler and Cola G. Parker, Kimberly-Clark Corporation, Neenah; A. B. Hansen, Northern Paper Mills, Green Bay, and J. C. R. Whitley, Marinette Paper Company, Marinette.

Valley Iron Works Honors Workers

Herman Filz and J. T. Hannagan were presented with gold watches by R. A. Peterson, president of the Valley Iron Works Company, Appleton, Wis., last week. The gifts were in recognition of their service of more than forty years with the company.

Speaks on Use of Paper in the War

"The Use of Paper in the War Effort" was the subject of an address before the Rotary Club of Kaukauna, Wis., last week by Paul West, technical director of the Thilmany Pulp and Paper Company. He outlined hundreds of vital uses and declared that if the paper mills in the United States were suddenly shut down, the war would be over within sixty days.

Nekoosa-Edwards Erects "V" Signs

Tall "V" signs have been erected on the lawns of the Nekoosa-Edwards Paper Company's mills at Neekoosa and Port Edwards, Wis. Inscribed upon them are the names of 137 men and one woman who are serving in the armed forces. The signs are illuminated at night with neon lights.

Leaders in Kimberly-Clark Golf

Tryg Lund and John Hilton have advanced to the semi-finals in the annual Kimberly-Clark Corporation golf tournament at Neenah, Wis. Lund defeated Francis Landig and W. Stanul in the F. S. Shattuck flight. Hilton eliminated Les Gilhein and Harold Jones in the Harry Price flight.

Johnson-Heitman Nuptials

Charles Johnson, research assistant at the Institute of Paper Chemistry, Appleton, Wis., and Miss Gertrude Heitman of Marquette, Mich., were married Saturday, August 15, at Trinity Lutheran church, Neenah, Wis. The couple will reside in Appleton following a honeymoon trip.

Canadian Paper Plants May Lose Manpower

Plan Announced By Prime Minister For Control of All Dominion Manpower Likely To Affect Manufacturers of Paper and Pulp — Advisory Committee Is Set Up—Other Late News of the Industry.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., August 24, 1942—The pulp and paper industry is among the large industries likely to be affected by a plan just announced by Prime Minister Mackenzie King for control of all manpower in the country, with selective service for the military forces and for industries essential to the war effort. Under this plan the Wartime Prices and Trade Board, which controls civilian trade and industry, has been instructed to make effective immediately a measure looking to the curtailment "and eventual elimination" of non-essential activities. To this end strict measures for the control and oversight of the movements of workers are to be exercised, with prohibition of such movement without permission, while after a fixed period employed persons may be required to accept any work for which there is special need. Women as well as men are required to produce munitions of war and to carry on essential services, and registration of women is a part of the program. Services of men and women are also imperatively needed for the armed forces. For the present the conscription of men for the military service will remain with the Department of War Services, but in the near future the task of calling up men for military service will be transferred to the Director of National Selective Service.

Delegation Waits on Ottawa Officials

An advisory committee on the pulp and paper industry's manpower situation has been set up, Elliott M. Little, Director of National Selective Service, informed a delegation of civic and labor representatives from the Niagara district who called on him seeking government assurance that no steps would be taken to curtail power available to pulp and paper plants without full consideration of all the circumstances.

A dispatch from Ottawa reports the Selective Service director had given the committee to understand, a spokesman said, that the problems of electrical power and manpower, would be met shortly by a co-ordinated effort and that the results "would work out very satisfactorily."

Mr. Little had also promised he would co-operate fully with Power Controller J. H. Symington, and that the Niagara district would not suffer, except in proportion to other parts of the Dominion.

The despatch further stated that the Southern Ontario delegates, representing civic and labor interests in the Niagara peninsula pulp and paper industry, presented briefs to Mr. Little, Labor Minister Mitchell and Munitions Minister Howe at a conference.

The briefs, presented individually, aired the anxieties of all municipalities and labor groups represented. Collectively, the delegation urged that no diversion of electrical power be made from the pulp and paper industry before full investigation, and that power to "luxury industries" be restricted first.

One brief, presented by the portion of the group representing trade unions of the paper industry, said that in the 10 mills represented by the delegation there were 2,132 union members with a total of 4,154 dependents, and that a "much larger group of secondary employees" would be involved in any layoff.

"We contend that no evidence has yet been submitted to us that there is an actual power shortage," the brief said, adding that large amounts of power are being exported to the United States.

"Until further evidence is presented to us that shows the necessity of this power export, the government has no right to curtail the paper industry because of claims of shortage of power," the brief said.

The brief also said "it is a known fact that business interests in Canada have been continually trying to shut down the operations of one of the group of mills we represent as employees." The mill was not identified.

"We desire to know whether these business interests are at work in the present move to curtail production of paper in the area we represent as workers," the brief said.

New Brunswick's Stumpage Rates

Owing to substantially increased cost in the management of Crown lands, including forest equipment and lookout towers, Hon. F. W. Pirie, Minister of Lands and Mines for New Brunswick, has announced increases in Crown land stumpage rates for the year beginning August 1, 1942. The rates include an advance of 50 cents per thousand board feet on sawlogs and 25 cents per cord on spruce and fir pulpwood, as well as minor advances on some other products.

Canada's Overseas Forestry Corps

Sir Samuel Steel, of the British Ministry of Supply, has written to the headquarters of the Canadian Forestry Corps in Scotland warmly thanking the corps for their splendid services in combating recent forest fires. Following a warm, dry period fires broke out that threatened Scotland's large timber stands, so valuable to the war effort. Eight forestry corps of about 250 men each fought ten fires for days "with all the old skill they had displayed in Canada." British troops helped, but it was stated that it was a Canadian fire pump, veteran of many an Ontario and Quebec blaze, that really did the work on the large fires.

Short Time for Newfoundland Mills

Operations in the pulp and paper mill of the Anglo-Newfoundland Development Company, Limited, at Grand Falls, Newfoundland, have been reduced to a three-day week basis. Reduction to a five-day week basis has been put into effect at Bowater's (Newfoundland) Pulp and Paper Mills' plant at Corner Brook.

Publishers Anxious About Newsprint Supply

Although U. S. Consumers Have Large Stocks Mills Are Having Difficulty In Maintaining Normal Supply Routes — Overseas Shipments Are Most Pressing Problem — Other Late Industrial News.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., August 24, 1942 — Opinion prevails here that the figures released on newsprint stocks held by American newspapers indicate that the publishers are still a bit nervous concerning the future of supplies, principally from the standpoint of delivery facilities.

With stocks of newsprint paper held by American publishers at a 53-month high, it is pointed out that though little has been said, manufacturers have had and are still having considerable difficulty in maintaining their normal supply routes. This is particularly evident in overseas shipments. The scarcity of shipping and the need for available cargo space for urgent war materials and supplies, has cut shipments overseas by nearly two-thirds. This, it is thought, is reflected in a fear of possible curtailment in south-bound shipments.

Trend of Shipments Creates Apprehension

The trend of reserve stocks ever since the beginning of the war has indicated some apprehension on the part of publishers—quite a natural feeling under disturbed war conditions. For some years past Canadian manufacturers have been shipping an increasingly large quantity of their paper to the United States market by water. On the Pacific Coast, Powell River and the Pacific Mills have to use waterborne shipping the year 'round. In Ontario and Quebec the St. Lawrence-Great Lakes waterborne supply route has been extensively developed. At the same time a number of mills at Quebec use the Hudson River route for shipments to New York. In addition, Quebec and Maritime Mills also use coastwise shipping for transporting their product to the American market. No accurate figure is available as to the amount of tonnage that moves by water from Eastern Canadian mills to the U. S. market, but the total, it is estimated, would be better than 50% of all shipments. During recent months there has been sharp curtailment of coastwise shipping facilities, with a consequent diversion of a huge tonnage to the rails.

Railways have managed to absorb the additional business without undue difficulties up to the present. The question uppermost in the minds of all concerned is whether or not the railways will be able to take care of the paper traffic during the months of greater seasonal activity when the bountiful crops have to be moved.

Doubt also exists in official quarters, as is indicated by the U. S. Office of Price Administration's warnings as to a possible shortage of rail transportation. The problem faces pulp and paper interests of all kinds.

What can be learned concerning the views of transportation officials on this matter would indicate that they are hopeful, if not fully confident, that the requirements of all essential industries for transportation can be met.

Would Make Rubber from Paper Mill Waste

Application has been made to the War Production Board at Washington by the Ontario Paper Company for priorities on distilling apparatus to make rubber from a paper mill by-product.

Ontario Paper Company, owned by the Chicago Tribune, said in its appplication it would finance construction of facilities necessary to convert sulphite liquor, a waste product from the paper mill industry, into alcohol, the step preceding its conversion into synthetic rubber, at its mill in Thorold.

Through a series of chemical processes the alcohol would be converted into butadiene, which later, would make the rubber. The company offers to make the process available to other mills.

It is estimated that the sulphite liquor, which is drawn off in the production of wood pulp paper, is available in sufficient quantities in the United States and Canada to make 90,000 tons of synthetic rubber each year.

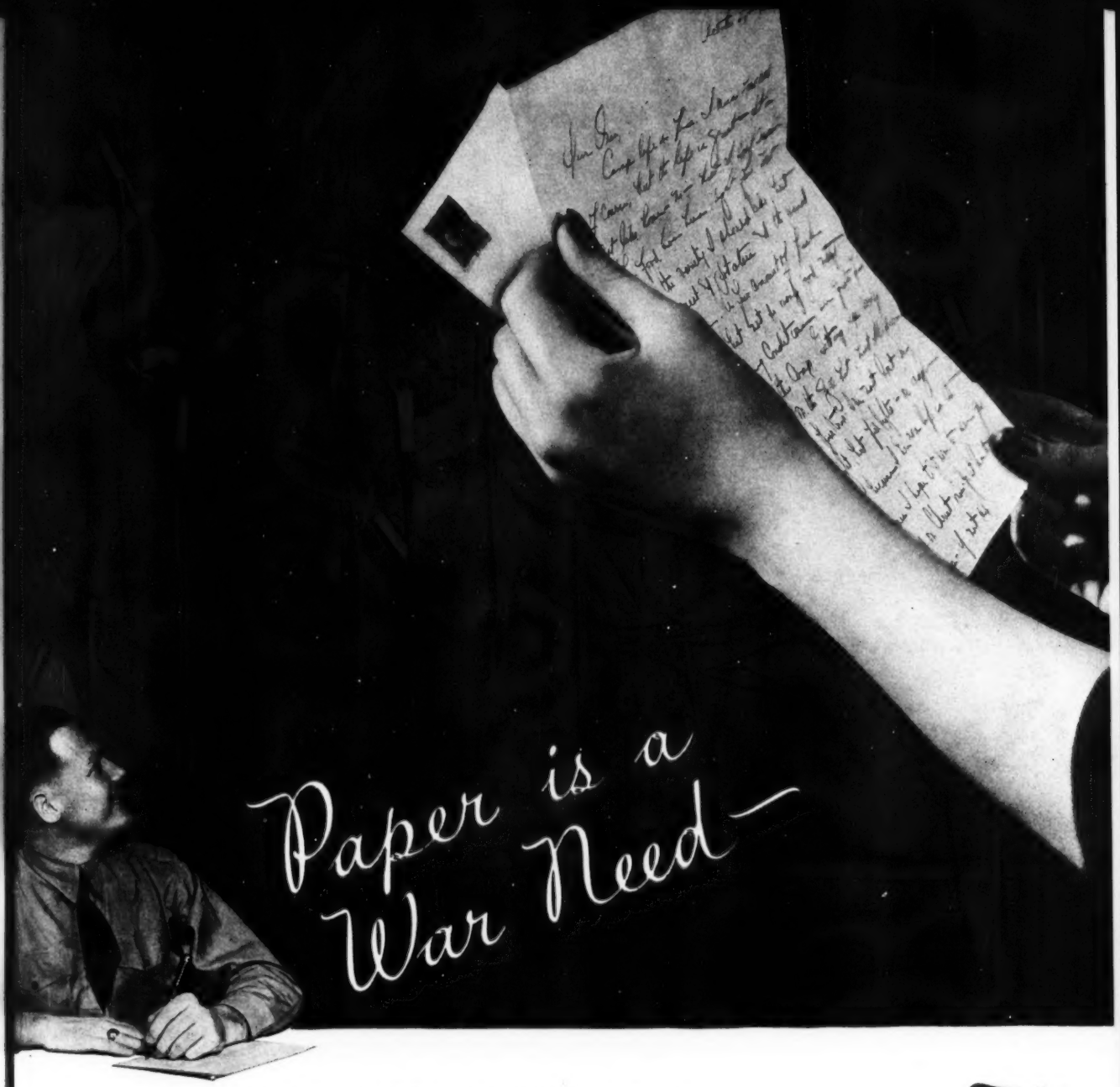
May Use Paper Boxes for Apples

Nothing has been revealed here to indicate that Ontario apple growers will have to resort to the use of paper packing boxes instead of wood boxes as has been suggested on the Pacific coast. Surprise is manifested that such a great lumber producing province as Vancouver should have a shortage of box shooks.

Faced with a shortage of box shooks due to pressure on lumber mills from other quarters and scarcity of labor, fruit association executives in British Columbia are said to fear that they will not be able to meet all requirements for wooden boxes and expect that cardboard boxes may provide an effective substitute, if not a permanent replacement.

Want Water Transportation

DEXTER, N. Y., August 22, 1942—Edward L. Malkin, general manager of the Dexter Sulphite Pulp and Paper Company, stated last week that the business men and manufacturers of Northern New York should start a vigorous campaign to make water transportation available as it means the salvation of the paper industry. He claims that the bringing of pulpwood ships into Black River bay would mean a saving of at least $3 a cord to his concern and virtually all of the other pulp and paper concerns in this section would be similarly affected. He pointed out that the submarine menace and the requisitioning of ships for transportation of war supplies have eliminated water carrying of pulpwood during the current summer. It is his belief that a government appropriation to dredge out the channel at the entrance to Black River bay would be of untold benefit to the paper industry alone. In the event the channel were deepened his concern could bring a boatload of pulpwood to the mill in barges at considerable savings.



MAIL HELPS MORALE!

While munitions get first call, soldier's mail goes through with surprising regularity. Just another use of paper in the war effort—but a most important use.

Maintenance of present paper-working equipment should be kept up to par because new equipment is almost impossible to get. Langston is ever at the service of its customers to help keep machines running at the end of the paper or board machine, in the finishing room or the converting plant.

But please let us know your needs as far in advance as possible!

SAMUEL M. LANGSTON COMPANY, Camden, New Jersey

LANGSTON

Slitters and Roll Winders

Larger Paper Orders Expected in Midwest

Indications Point To Renewal of Substantial Volume In Sales Particularly In Writing Paper — Higher Waste Paper Prices Are Reported—Salesmen Hold Final Golf Outing—Other Market News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., August 24, 1942—There are growing indications that large buyers of paper are entering the market at this time. Volume is sufficiently up from the "right" quarters to show that many hitherto hesitant concerns have either depleted their inventories or are confident that now is a healthy time to add to stocks on hand. July production reports circulated locally are said to give no exact indication that the situation is true the industry over but the writing paper group, for example, saw sufficient evidence of improvement in demand to feel much better about the situation.

Other grades feel that after Labor Day a more noticeable upward trend will be in evidence. Kraft paper representatives believe that a lot of excess accumulations have dwindled down to where buyers mean business while in the groundwood and newsprint circles the lag has been sufficiently pronounced to point to very low inventories—or a complete reversal in buying trends which is not likely. Waste papers were looking toward a new month with certainly more optimism than last month. Order has come out of chaos, a lot of previous mistakes will not be made again and the big stock piles are showing some signs of shrinking.

Higher Paper Stock Prices Reported

The waste paper trade was a bit upset on Friday of this week over reports that increased prices were being paid for newsprint and corrugated paper. Local reports indicated that some mills are now paying $10 a ton for newsprint and $12 a ton for corrugated though other mills have been said to have refused to pay these prices. The two increases are described as "not official" but dealers expect them to be taken up on a wide-spread basis. All the mills have large inventories from which to draw supplies but it is reported they are saving them for the Winter and are now operating on material shipped to them regularly by their dealers. By operating only on supplies shipped by dealers, the mills are helping to restore the market to normalcy because when the flow slackens the price rises. At present, say local comments, the flow of supplies is slowing down because peddlers are not giving so much consideration to waste paper at its present low prices. Some dealers, however, are raising their buying prices, thereby giving the peddlers some incentive to go out and pick up paper.

Describes Logging Operations

James Colvin, special staff correspondent of the Chicago Daily News, is now authoring a series of articles in that newspaper which certainly should help acquaint the average citizen with the processes that go into the making of paper. Over a Fort Williams, Ontario, dateline and with the Great Lakes Paper Company as his subject, Mr. Colvin's first article stressed the lumberjack's daily habits, tendencies, etc. The second article explains the necessity for a constant supply of wood, discusses various concessions let to concerns to supply the wood and describes the importance of dams in big-scale driving. The article also discusses the final steps in removing pulpwood from the bush and tells of the pulp, stacked since the warm-weather cutting along the strip roads and removed by sleigh, either horse, truck or tractor drawn. Mr. Colvin will also write about how raw wood is converted into paper, using eleven pictures in the pictoral section of the Chicago Daily News to show the transformation of "wood into words".

Salesmen Hold Final Golf Outing

The western division of the Salesmen's Association of the Paper Industry held its final golf outing at the Bob-O-Link Golf Club on Friday, August 21. Usually the semi-final event, the outing got a great deal of attention locally because it will this year replace the annual Olympia Fields tournament in September as the wind-up affair. Ray George, Tomahawk Paper Company sales executive and chairman of the outings this year, reported late Thursday that a record attendance was expected.

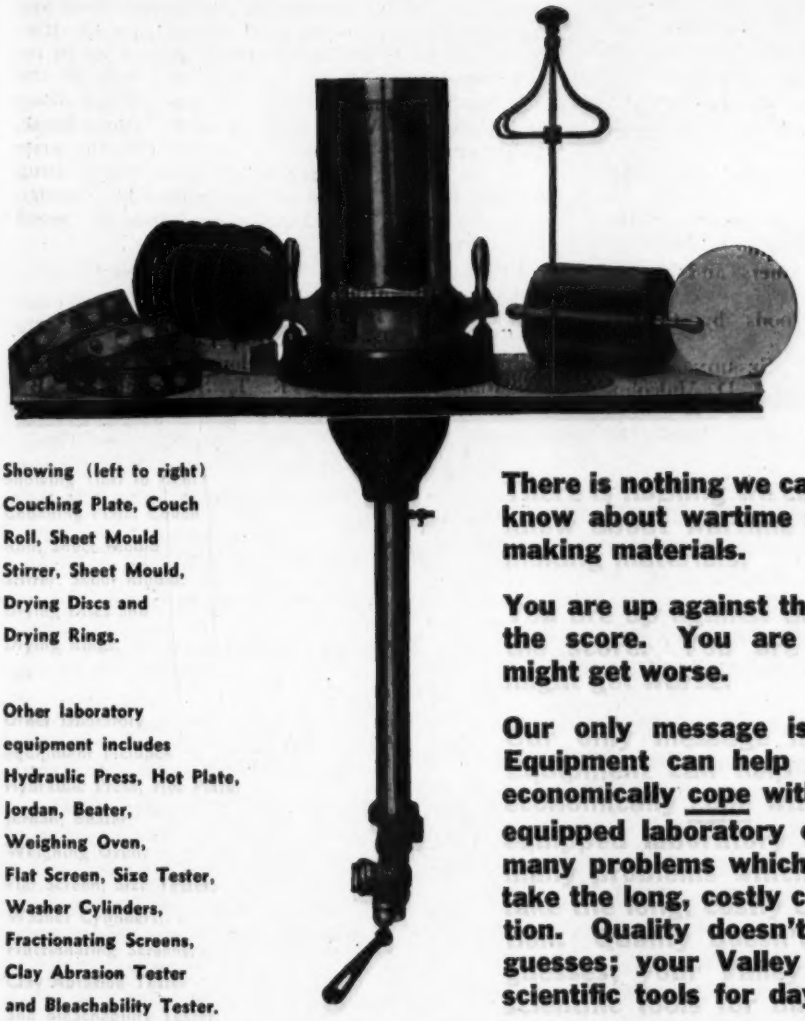
Employment Figures Show Business Decline

The Unemployment Insurance Division of the State made payment of 4656 claims coming from workers in paper and allied trades during the month of June. This represents a 1.3% distribution but an actual increase or percentage change of over 30% from the previous month. Here is additional indication of the partial slump which hit the industry during the summer months. Reports from the Department of Labor show that 63 makers of paper boxes, bags and tubes experienced a 3.3% decline in employment on June 15 as compared to May 15 while the June employment figure was 104.8 as compared to the index figure of 118.9 a year ago. Payrolls were down 3.6% for June over May with the 1942 index figure in June reported as 142.6 compared to 149.1 in June of 1942. The general classification of "other paper goods" listed by the State's labor research body shows an almost identical percentage decline all along the line.

Controllers Meet in Chicago Next Month

A side of the industry which perhaps receives little outside attention but is none the less extremely important, comes in to its own on September 21 to 23 when controllers participate in the annual meeting of the Controllers Institute at the Palmer House, Chicago. "Taxes," "Cooperation With the War Program," "Post-War Controllership Problems" — all these and other subjects reflecting the War times will be considered. Discussions of Federal taxes, with Treasury officials participating, will be a feature of the three-day program. Arthur R. Tucker, managing director of the Institute, expects the meetings to be well attended because of the importance of the discussions.

WAR PAPER



Showing (left to right) Couching Plate, Couch Roll, Sheet Mould Stirrer, Sheet Mould, Drying Discs and Drying Rings.

Other laboratory equipment includes Hydraulic Press, Hot Plate, Jordan, Beater, Weighing Oven, Flat Screen, Size Tester, Washer Cylinders, Fractionating Screens, Clay Abrasion Tester and Bleachability Tester.

There is nothing we can add to what you already know about wartime shortages of vital, paper-making materials.

You are up against the problem daily and know the score. You are also fully aware that it might get worse.

Our only message is this: Valley Laboratory Equipment can help you more effectively and economically cope with the situation. A Valley-equipped laboratory can bring up solutions to many problems which would otherwise have to take the long, costly course of mill experimentation. Quality doesn't have to suffer so many guesses; your Valley laboratory gives you the scientific tools for day-to-day quality control.

VALLEY IRON WORKS COMPANY

APPLETON, WISCONSIN

CANADIAN AGENTS: PULP & PAPER MILL ACCESSORIES, LTD., DOMINION SQ. BLDG., MONTREAL, P. Q.

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Pulp Washing Systems • High-Speed Beaters • Breaker Beaters • Vortex Beaters • Plug Valves
Sutherland Refiners • Flat and Rotary Screens • Thickeners • Deckers • Paper Markers • Roll-Headers

Tentative Program for TAPPI Fall Meeting

The following is the tentative program for the fall meeting of the Technical Association of the Pulp and Paper Industry to be held at the Statler Hotel, Boston, Mass., September 29 to October 1, 1942 inclusive:—

Monday, September 28, 1942

Registration, Informal Mill Visits, Committee Meetings.

Tuesday, September 29, 1942

10:00 A.M. WARTIME PACKAGING SESSION—Chairmen—Arno W. Nickerson and J. D. Malcolmson.

1. Opening Remarks—R. A. Hayward, President, TAPPI.
2. Paper Has Some New Packaging Jobs by C. W. Browne, Editor, Modern Packaging.
3. Protective Coatings for Containers and Wraps (Speaker to be Announced).
4. Packaging of Dehydrated Foods by Charles Watson III, Dry-Pak Corp.

2:00 P.M. WARTIME PACKAGING SESSION—Chairmen—Arno W. Nickerson and J. D. Malcolmson.

1. Ration Container Problems by Capt. Robert R. Melson, U. S. Quartermaster Corps.
2. Folding Carton and Fiberboard Substitutes for Metal Containers by J. D. Malcolmson, Robert Gair Co.
3. Replacement of Metal Containers by Use of Cellulose Sheeting by J. D. Rankin, E. I. du Pont de Nemours & Co., Inc.
4. An Engineering Approach to the Solution of Packaging Problems Involving M.V.T. Resistance by J. F. Halladay, American Coating Mills.
5. The Use of Urea-Formaldehyde Resins for the Waterproofing of Starch Used in the Production of Solid Fiber and Corrugating Board by Philip B. Taft, The Resinous Products and Chemical Co.

Wednesday, September 30, 1942

10:00 A.M. PAPER INDUSTRY IN WAR SESSION—Chairman—W. H. Kenety.

1. Opportunities and Services of the Paper Industry by R. A. Hayward, President, TAPPI.
2. The War Production Board and the Industry by David P. Winton, W. P. B.

2:00 P.M. THE MILL ORGANIZATION IN WARTIME SESSION—Chairman—W. L. Cassiday.

1. Personnel and the War Effort by H. C. Noyes, Oxford Paper Co. (Pending).
2. Technical Departments Meet War Problems by F. H. Frost, S. D. Warren Co.

Thursday, October 1, 1942

10:00 A.M. ENGINEERING AND THE WAR SESSION—Chairman—Roderick O'Donoghue.

1. Micarta in the Paper Industry by F. P. Hunsicker, Westinghouse Electric & Mfg. Co.
2. Fuels by E. F. Burns, International Paper Co.
3. Power Teamwork for Victory by P. W. Swain, Power Magazine.
4. The Flow Spreader by S. W. Bratin and F. M. Sanger, Pusey & Jones Corp.

10:00 A.M. THE WOOD PULP INDUSTRY WARTIME PROJECTS SESSION—Chairmen—Henry Perry, Paul Hodges, D. T. Jackson and D. C. Porter.

1. Grinding of Hardwoods by E. R. Schafer and J. C. Pew, Forest Products Laboratory.
2. Ethyl Alcohol from Sulphite Waste Liquor by F. S. Hanson, Kimberly-Clark Corp.
3. Pulping Study on Selected Hybrid Poplars by M. W. Bray and B. H. Paul, Forest Products Laboratory.
4. A Study of the pH Factor in the Hypochlorite Bleaching of Wood pulp. Part II. Two Stage Treatment of Sulphite Pulp by F. Casciani and G. K. Storin, Niagara Alkali Co.
5. Effect of Iron on Pulp Color in Bleaching by F. A. Simmonds and E. L. Keller, Forest Products Laboratory.

2:00 P.M. WATER CONSERVATION SESSION—Chairman—L. B. Miller.

1. Conservation In and By Chlorination by R. B. Martin. Wallace & Tiernan Co.
2. Process Water—New Developments and Conservation Measures by R. T. Sheen and L. B. Miller, W. H. & L. D. Betz.
3. Recent Developments in the Treatment of Papermill Process Water by Daniel J. Sounders, Permutit Co.
4. Diatoms in Paper Manufacture by Howard W. Hall, Dicalite Co.

2:00 P.M. TUB SIZING SESSION—Chairman—L. B. Tucker.

1. Enzyme Conversion of Starch by E. P. Gillan, Anheuser-Busch, Inc.
2. Synthetic Resin Emulsions for Paper Saturation by Ralph T. Nazzaro, American Resinous Chemicals Corp.
3. Tub Sizing Difficulties by W. G. Hendricks, Byron Weston Co.
4. Discussion of Tub Sizing Materials (Speakers to be announced).
5. Glue for Tub-Sizing by O. J. Simonson, Milligan & Higgins Corp.

Institute of Paper Chemistry Papers
(To be presented by title)

1. The Measurement and Influence of Bonding between Paper Fibers by James d'A. Clark.
2. Factors Influencing Density and Its Effect on Paper Properties by James d'A. Clark.
3. The Variable Angle Surface Illuminator by John H. Graff.
4. Chart for Speck Analysis by John H. Graff and B. L. Browning.
5. A Study of the Fluorescence of Wood and of the Extractives of Wood by William W. Marteny.
6. A Fundamental Study of the Nature of Fiber Staining by Iodine Stains by Herbert W. Rowe.

7:00 P.M. Banquet—Norman I. Bearse, Toastmaster. Speaker—Bill Cunningham, Columnist, Boston Herald.

Paper Products Exhibit

The association in connection with its convention will have an exhibit showing the progress being made by various industries in substituting containers made

COLOR

serves on another front

The paper industry is confronted with the need of replacing critical materials with paper products. It may be necessary to shift to selective production of paper products for the most essential uses. This requires planning for adequate supplies of pulp, paper and paper products both for direct war use and essential civilian needs. This program must be carried out despite restrictions in the use of critical materials and the accompanying need for conservation.

Many of these products will carry color for efficiency and safety. Dyes will be used for standardizing, tinting and identifying paper products for the armed forces—for all essential communications.

To best utilize available dyestuffs for the many paper products required is a job for du Pont dyestuff technicians. The services of our specially trained sales and technical staff are at your disposal to help solve the many dyeing problems which are certain to occur.

E. I. DU PONT DE NEMOURS & COMPANY, (INC.)
Organic Chemicals Department, Dyestuffs Division
Wilmington, Delaware

DU PONT DYESTUFFS
REG. U.S. PAT. OFF.

in whole or part of paper or paperboard for materials essential to the war effort.

Any company that is doing its part in aiding the National Government in this way is urged to show its old and new containers or wraps in this exhibit. No charge will be made to any exhibitor since the association is financing this exhibit as a public relations policy to help bring to the attention of the public the story of how industry rises to the occasion in times of national stress.

Sales executives of companies that have any container or other paper product to show are welcome to assist in this industry public relations job and should write immediately to R. G. Macdonald, Secretary of the Technical Association of the Pulp and Paper Industry, 122 East 42nd street, New York, N. Y. for details.

Rules on Five-Ton Pulp Shipments

WASHINGTON, D. C., Aug. 24, 1942—In order to eliminate superfluous administrative operations, the Director General for Operations today removed shipments of less than five tons of wood pulp in any calendar month from the restrictions on deliveries imposed by General Preference Order M-93.

Pulp consumers frequently order pulp in small quantities for experimental purposes. The effort to keep track of these small orders under M-93 results in unnecessary administrative difficulties.

Under Amendment No. 2 to the order, shipments of five tons or less of any one grade of pulp to any one person during any calendar month may be made without obtaining the authorization of the Director General for Operations.

AMENDMENT NO. 2 TO GENERAL PREFERENCE ORDER M-93

Paragraph (e) of Section 1096.1 (General Preference Order M-93), as amended, is hereby amended to read as follows:

(1) Small Quantities. Notwithstanding the provisions of paragraphs (c) and (d) of this order, any person may deliver wood pulp to any other person or persons in an amount not exceeding five tons of any one grade to each such person during any calendar month, and any person may accept deliveries of wood pulp from any other person or persons in an amount not exceeding five tons of any one grade from each such person during any calendar month.

(2) Intra Company Deliveries. The prohibitions and restrictions contained in this order shall apply not only to deliveries to other persons, including affiliates and subsidiaries, but also to deliveries from one branch, division, or section of a single business enterprise to another branch, division, or section of the same or any other business enterprise to another business enterprise under common ownership or control; and each such affiliate, subsidiary, branch, division or section shall for the purposes of this order be deemed a separate person.

L. B. Challies Elected Director

J. B. Challies, vice-president of Shawinigan Water and Power Company, has been elected a director of the recently reorganized Brown Co., one of the principal pulp operators in New Hampshire and Quebec. The Shawinigan Water and Power Company are joint owner with the Brown Company of a new power development at La Tuque, Que.

Obituary

P. M. Harrington

Preston M. Harrington, for many years president of the Bishop Paper Company at 7-11 Laight street, New York, died August 20 at his home in South Nyack, N. Y., after a long illness. He was 72 years old.

Mr. Harrington was born in Cambridge, N. Y., the son of the late Daniel and Rachel Harrington, both members of old colonial families. He came to New York while a young man and became associated with an old New York paper firm, Clement & Stockwell, owned by relatives. This firm later became the Bishop Paper Company.

Surviving are his widow, a daughter, two sons, two sisters and a brother.

J. H. Cunningham

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., August 24, 1942—The death has been announced at Bear River, N. S., of J. Howard Cunningham, formerly of the staff of the Bear River Pulp and Paper Company. Mr. Cunningham, who had been ill for a long time, was a graduate of Acadia University, Wolfville, N. S., and took a post-graduate course in Germany. In recent years he had been a pulpwood operator and lumber manufacturer.

Kalamazoo Mill No. 2 Shuts Down

KALAMAZOO, Mich., August 24, 1942—Shut-down of the Kalamazoo Paper Company's No. 2 mill, probably for the duration, was announced last week by George T. Jubb, the company's president.

Mr. Jubb said two machines in the No. 2 mill were affected by the closing, a move necessitated, he said, by "lack of business and a shortage of labor." No. 2 mill employees were absorbed in the company's other divisions which are operating on five-day weeks.

One of the two machines in Mill No. 2 had been down for about six months. The other went down several days ago. It was used in the manufacture of book paper.

Mr. Jubb said the company still is operating two divisions, each with two machines, and two coating mills.

Many other book paper-producing mills in the Kalamazoo Valley are operating on limited schedules, but it was believed the Kalamazoo Paper Company's shut-down action was the first such complete step to be taken as a result of the present emergency.

Papermaking Expands in Ireland

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., August 24, 1942—The papermaking and manufactured stationery industry in Ireland is one of the 11 groups of industries in that nation showing the greater rates of increase between 1936, and 1940, the 1940 census of industrial production shows, according to reports received by the Department of Commerce. The industry during the 5 years increased its output by 69.9 percent.

Figures for the industry show a slight decline in volume in 1940 when compared with figures for 1939, however.

Bids for Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., August 24, 1942—The Government Printing Office has received the following bids for 468,000 pounds of 8 x 10½ white ground wood mimeograph paper: Barton, Duer & Koch Paper Company, 4.6 cents; Marquette Paper Company, 5.28 cents; R. P. Andrews Paper Company, 4.84 cents; and Frank Parsons Paper Company, 5.178 cents.

For 192,000 pounds of 38 x 48 supercalendered book paper: R. P. Andrews Paper Company, 5.58 cents; Central Ohio Paper Company, 5 cents; Marquette Paper Company, 5.58 cents; Mudge Paper Company, 5.60 cents; Old Dominion Paper Company, 6.876 cents; Frank Parsons Paper Company, 5.58 cents; Perkins-Goodwin Company, 6.08 cents; Whitaker Paper Company, 5.58 cents; Wilcox Walter Furlong Paper Company, 5 cents; Mead Sales Company, 5.5 cents; Bermingham & Prosser Company, 5.79 cents; and Coy Hunt & Company, 4.98 cents.

For 300,000 pounds of telephone book news paper in 28-inch rolls: R. P. Andrews Paper Company, 4.64 cents; Baxter Paper Company, 4.65 cents; Graham Paper Company, 4.84 cents; Mudge Paper Company, 4.63 cents; Old Dominion Paper Company, 4.6449 cents; Stanford Paper Company, 4.65 cents; Walker Goulard Plehn Company, 4.59 cents; Bradner Smith & Company, 4.496 cents; Bulkley Dunton & Company, 4.65 cents; Bermingham & Prosser Company, 4.52 cents; D. L. Ward & Company, 4.64 cents; Lamy Paper Company, 4.84 cents; and Combined Locks Paper Company, 5.225 cents.

For 19,400 pounds of Gulf sulphite index paper; Walker Goulard Plehn Company, 8.73 cents; Mudge Paper Company, 8.43 cents; Paper Corp. of U. S., 8.34 cents; Old Dominion Paper Company, 8.74 cents; Barton, Duer & Koch Paper Company, 7.19 cents; Whitaker Paper Company, 6.95 cents; Marquette Paper Company, 6.35 cents; R. P. Andrews Paper Company, 6.98 cents; and Bulkley Dunton & Company, 8.9 cents.

For 40,750 pounds of 25% rag, 28 x 34 yellow ledged paper; Barton, Duer & Koch Paper Company, 12 cents; Butler Company, 12.43 cents; Central Ohio Paper Company, 12.49 cents; Forest Paper Company, Inc., 12.05 cents; Mudge Paper Company, 11.06 cents; Old Dominion Paper Company, 14.989 cents; Paper Corp. of U. S., 11.92 cents; Frank Parsons Paper Company, 13.00 cents; Stanford Paper Company, 11.18 cents; Walker Goulard Plehn Company, 10.96 cents; Bradner Smith & Company, 11.12 cents; Bulkley, Dunton & Company, 13.62 cents; Bermingham & Prosser Company, 12.51 cents; Coy Hunt & Co., 11.69 cents; and D. L. Ward & Company, 12.49 cents.

For 23,400 pounds of 25% rag, 24 x 38 yellow ledger paper; Barton, Duer & Koch Paper Company, 12.00 cents; Butler Company, 12.43 cents; Central Ohio Paper Company, 12.49 cents; Forest Paper Company, Inc., 12.05 cents; Mudge Paper Company, 11.06 cents; Old Dominion Paper Company, 14.989 cents; Paper Corp. of U. S., 11.92 cents; Frank Parsons Paper Company, 13.00 cents; Stanford Paper Company, 11.18 cents; Walker Goulard Plehn Company, 10.96 cents; Bradner & Smith & Co., 11.12 cents; Bulkley Dunton & Company, 13.62 cents; Bermingham & Prosser Company, 12.51 cents; Coy Hunt & Company, 11.69 cents; and D. L. Ward Company, 12.49 cents.

For 23,400 pounds of 25% rag, 24 x 38 blue ledger paper; Barton, Duer & Koch Paper Company, 12.00 cents; Butler Company, 12.43 cents; Central Ohio Paper Company, 12.49 cents; Forest Paper Company, Inc., 12.05 cents; Mudge Paper Company, 11.06 cents; Old Dominion Paper Company, 13.00 cents; Stanford Paper Company, 11.18 cents; Walker Goulard Plehn Company, 11.78 cents; Bradner Smith & Co., 11.12 cents; Bermingham & Prosser Company, 12.51 cents; Coy Hunt & Co., 11.69 cents; and D. L. Ward Company, 12.49 cents.

For 308,000 pounds of 42 x 58 poster paper; R. P. Andrews Paper Company, 7.5 cents; Stanford Paper Company, 6 cents; Marquette Paper Company, 5.97 cents; and Frank Parsons Paper Company, 6.84 cents.

For 6,000 sheets of 22 x 28 mist gray photomount board; Bradner Smith & Company, $6.24 per M sheets; Barton, Duer & Koch Paper Company, $40.60; R. P. Andrews Paper Company, $60.33; Mudge Paper Company, $40.50; Mathers-Lamm Paper Company, $60.00 and $42.50; Old Dominion Paper Company, $60.89, $64.59 and $68.18; Stanford Paper Company, $40.50; Hurlock Brothers Company, $60.21 less 2%; Charles W. Speidel & Company, $68.95; and M. S. Ginn & Co., $60.00 less 2%.

For 72,700 pounds of 40 x 42 25% rag, yellow bond paper; 80,800 pounds same 44 x 68; 14,600 pounds same 40 x 52½; and 16,200 pounds same 34 x 44; Whitaker Paper Company, 12 cents; Whiting Patterson Company, Inc., 10.4 cents; Cauthorne Paper Company, 12.34, 12.43 and 12.39 cents; Bermingham & Prosser Company, 11.68 cents; Paper Corp. of U. S., 10.9 cents; and Whiting Paper Company, 14 cents.

B. C. Needs Forestry Plans

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., August 24, 1942—British Columbia cannot afford not to go ahead with constructive forestry plans. The province has far too much at stake to take any chances on a forestry program that is not designed to conserve and perpetuate the industry, declared Thomas Wright, forest authority of the University of British Columbia, during a series of lectures on the conservation of various natural resources which was arranged at the University recently.

In his lecture which covered the forest industries, Mr. Wright said, "The present value of our annual forest production is more than $100,000,000. It might cost $300,000 or even $500,000 more a year for improved protection, reforestation and forest management. Certainly this is a low price to pay to insure a supply of raw materials for the plywood plants and pulp mills of another generation.

"If we don't spend a small amount now, we may pay many times that price in the form of low-grade products and declining industry."

New Products and New Uses for Old

New Filter-Crucible for Paper Labs.

To save time and eliminate indirect methods (such as the use of filter pads or papers) in making ash determinations of alpha-cellulose and other fibers, The Selas Company of Erie Avenue and D. Street, Philadelphia, Scientific Equipment Division, has recently introduced a porcelain filter-crucible in which the base is a permanent porous-ceramic filtering element capable of quantitative fiber retention along

NEW PORCELAIN FILTER-CRUCIBLES

with extremely fast flow. A new ceramic material, "XF," constitutes the glazed-in filtering disc.

Such filter-crucibles are available in sizes of 60 ml., 40 ml., 30 ml., and 20 ml. volume, through laboratory supply dealers. Fiber retained on the crucible base may be repeatedly ashed (to incandescence if necessary) over a Bunsen burner without damaging the crucible and its integral filtering disc—or changing its weight, porosity or filtering characteristics.

Pulp and paper laboratories report, for example, "Usage during a full year has shown no defect affecting the usefulness of the article in any way . . . and (the original crucibles) are still being used regularly in all determinations requiring ignition of the precipitate." Powder plant chemists have also found the new XF filter-crucibles to be helpful for filtrations involving wood pulp fillers. A catalogue will be sent on request.

Saran Pipe

A new plastic pipe, manufactured in the same dimensions as extra strong steel pipe of 2 inches OD or less, has just been announced by The Dow Chemical Company. American industry hails this plastic pipe as a contribution of considerable magnitude. The resistance of this pipe to extreme moisture, chemicals and solvents, coupled with its strength and fatigue life, indicate it will play a vital role in industry. It is entirely unaffected by water—and only a few solvents exhibit any adverse effects.

This revolutionary type of pipe is made of a new thermoplastic resin known as Saran. The base resin is odorless, tasteless and nontoxic: The plastic does not burn and its toughness and abrasion resistance are of a high order. The retention of these properties on aging insures excellent wearing qualities. This pipe is nonscaling and withstands freezing. Heat resistance is said to be excellent up to 175 degs.

Saran pipe is produced in smooth, round, accurately sized lengths having dimensions identical with those of strong iron pipe. It can be readily welded, heated and bent. The pipe can be cut with a wood or hack saw and threaded with ordinary iron pipe dies.

In demonstrating the threading of the larger plastic pipe sizes, Dow engineers advise inserting a close fitting plug within the end to be threaded to guard against compression of the pipe and resultant shallow threads. This precaution is not absolutely essential providing sharp dies are used.

Weight of this pipe is naturally less than comparable sizes of iron pipe. This, too, is a decided advantage in shipping, general handling and suspension. Tabular data concerning sizes, weights and bursting pressures is available.

Fittings for Saran pipe, except standard flanges, are not available at the present time although they are expected to follow shortly. Molds are now being constructed to make additional flanges, with threaded ells, tees, and couplings to be available in the near future.

Linseed Straw for Paper in India

The Harcourt Butler Institute, Cawnpore, India, has been making a series of investigations for the United Provinces Government, Delhi, India, to determine the utility of linseed straw, produced in large quantity in that country. Over 1,000,000 tons of this material are being consumed annually, it is stated, for fuel purposes and which, if properly utilized, would produce a large net revenue. Indian linseed is largely of the oil-breeding variety, it is pointed out, which does not, as a rule, produce a good fiber. However, the fiber extracted after threshing the seed would be superior, it is noted, to some of the present native substitutes for flax fiber. Research at the Institute shows that the fiber is strong and can be made extremely useful for many purposes, including the manufacture of finer grades of paper. Investigations are now in progress to determine the best methods of bleaching and softening the material. On the completion of the research, it is planned to develop means for utilization of the fiber, according to the findings and recommendations of the Institute, including paper production.

"Lever-Seald" Plug Valves

The Homestead Valve Manufacturing Company, Coraopolis, Pa., announces a new line of "Lever-Seald" Plug Valves for 150 pounds working pressure.

Face to face dimensions of each valve in the new line are the same as those of the corresponding size of wedge-gate valve. Thus they are instantly interchangeable with wedge-gate valves, without piping changes.

Other features of the new line include Homestead's traditional "quarter-turn" operation, and a powerful leverage to provide positive, extra-easy opening or shut-off under all conditions.

Sizes range from 1½ to 10 inches, in either semi-steel or steel.

May Buy in Greater Quantities

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., August 26, 1942—Companies operating under the Production Requirements Plan are given permission to purchase a number of commodities in greater quantities than authorized on their PRP certificates by Exemption No. 2 to Priorities Regulation No. 11, issued by the Director General for Operation.

The exemption provides that a PRP unit is free to accept delivery of any material not included on Materials List No. 1 of the fourth quarter PD-25A application form, or of any material exempted from inventory restrictions by General Inventory Order M-161, even though such acceptance is in excess of the amount authorized on the company's PRP certificate.

Materials chiefly affected by the exemption are chemicals, which were omitted from the materials list of the fourth quarter PD-25A form. Among other materials exempted from PRP restrictions because they are listed in the General Inventory Order M-161 are certain materials used in the manufacture of refractory brick, waste paper, bulk salt, borax, caustic soda and soda ash. The exemption will also apply to such other materials as may be added to M-161 from time to time.

Except as provided in today's exemption, companies operating under PRP who apply for priorities assistance to obtain any material are restricted in their acceptance of such material to the amounts authorized on their PRP certificate, unless authorization was denied for the specific reason that no preference rating is necessary to obtain the materials.

Thomas Employees To Hold Election

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., August 26, 1942—By direction of the NLRB an election by secret ballot will be held within 30 days among the employees of the Thomas Paper Stock Company of Chicago, Ill., to determine union recognition and the right to bargain collectively.

The election is the result of a petition filed with the NLRB by the CIO Warehouse and Distribution Workers Union concerning the representation of employees engaged in production work. On July 11, 1942, the union requested the company to recognize and confer with it for the purpose of collective bargaining. The company has failed to recognize the union.

In the course of the hearing a statement was introduced by the regional director of the NLRB showing that the CIO Union represents a substantial number of employees of the Thomas Company. The election is being held as part of the investigation by the NLRB to determine whether the union is entitled to recognition and whether the employees wish to be represented by the CIO Warehouse and Distribution Workers Union for the purposes of collective bargaining.

Hopper Employees Cooperate

TAYLORVILLE, Ill., August 24, 1942—The Hopper Paper Company recently put on a one day Victory Bond Drive which resulted in 100% cooperation on the part of the employees. "Everyone is buying bonds or stamps," says B. C. Hopper, president of the company, "and the total is over 10% of our entire payroll."

Contents of Employee Magazines

Recently, the Chief of the Public Relations Branch of the Army Air Forces expressed the opinion that stimulation of morale among key groups of industrial workers is an important duty of public relations officers. "The best media for this type of public relations," he stated, "are the industrial house organs." Many helpful facts about industrial house organs are brought out in a new study entitled, "The Contents of 325 Employee Magazines," issued by the Policyholders Service Bureau of the Metropolitan Life Insurance Company.

This report is the second of a series on the subject of employee publications issued by the Bureau in recent months, and is concerned with the matter of contents and methods of checking employee interest. It is based on a review of 325 American and Canadian employee publications, supplemented by consultation with editors of 88 publications.

The report contains a detailed table which summarizes different types of material found in the publications studied. Significant points about each type of material are discussed, and many reproductions are used to show how they are illustrated. Particular attention is paid to material that has application to present-day problems of quickly acclimating large numbers of new employees, including many women, to new surroundings and new pursuits.

Several pages of the report are devoted to the subject of checking reader interest. Among the devices considered which are used to measure the success of the publication are informal checks, questionnaires, and surveys. Examples are given to show how these devices have been used and the results that have been attained.

The first report of this series, "Employee Magazines," issued earlier this year discusses the aims, policies, planning, financing, distribution and physical factors involved in getting out an employee publication. Either or both of these reports will be available to executives who address the Bureau on their business stationery. Address: Policyholders Service Bureau, Metropolitan Life Insurance Company, One Madison avenue, New York City.

Rules on Newsprint Sales

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., August 26, 1942—Sales of newsprint for export may be made between a mill, one or more merchants, and then to an exporter without imposing unusual domestic extra-haul costs on any of them, according to an interpretation made today by the Office of Price Administration.

The ruling clarifies the provisions of the Maximum Export Price Regulation and Maximum Price Regulation No. 130 (newsprint) and implements a previous interpretation which permitted producers to pass on additional wartime shipping costs to their foreign purchasers.

Paper Must be Watermarked

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., August 26, 1942 — Paper used exclusively for the printing of newspapers, periodicals, and magazines, must bear watermarked parallel lines, from four to six centimeters apart, in order to obtain exemption from import duties into Uruguay according to a report of the Department of Commerce.

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending Aug. 22, 1942

STOCKS

	High	Low	Last
A. P. W.	....	....	....
Armstrong Cork Co.	26½	25½	26⅜
Celotex Corp.	6⅝	6¼	6½
Celotex Corp., pf.	70¾	70	70
Certain-Teed Products Corp.	2	1¾	2
Certain-Teed Products Corp., pf.	26½	25½	26
Champion Paper & Fibre Co.	15¾	15¾	15¾
Champion Paper & Fibre Co., pf.	96	95	96
Congoleum Nairn Co.	16⅛	15⅜	16⅛
Container Corp. of America	12¼	12	12¼
Continental-Diamond Fibre Co.	6⅞	6½	6⅝
Crown-Zellerbach Co.	11¾	10¾	11¼
Crown-Zellerbach Co., pf.	82	82	82
Dixie-Vortex Co.	9	9	9
Dixie-Vortex Co.—A.	36	35¾	36
Flintkote Co.	11½	11⅜	11¼
Robert Gair	1¾	1⅝	1¾
Robert Gair, pf.	....	....	....
International Paper Co.	9⅜	9	9
International Paper Co., pf.	50	48½	48½
Johns-Manville Corp.	57⅛	56¾	57
Johns-Manville Corp., pf.	....	....	....
Kimberly Clark Corp.	26	26	26
Mac Andrews & Forbes	17⅛	17	17⅛
Mac Andrews & Forbes, pf.	....	....	....
Masonite Corp.	26½	26¼	26¼
Mead Corp.	6⅞	6⅞	6⅞
Mead Corp., pf.	....	....	....
Paraffine Companies, Inc.	29	29	29
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	9⅛	8¾	9⅛
Rayonier, Inc., pf.	26	25	26
Ruberoid Co.	17½	17½	17½
Scott Paper Co.	35	33	34¾
Scott Paper Co., pf.	111	109½	111
Sutherland Paper Co.	....	....	....
Union Bag & Paper Corp.	8½	8¼	8½
United Paperboard Co.	3¼	3	3
U. S. Gypsum Co.	53	50¾	51
U. S. Gypsum Co., pf.	....	....	....
West Virginia Pulp & Paper Co.	13⅜	13⅛	13⅜

BONDS

Abitibi Pulp & Paper Co. 5s '53	....	....	....
Celotex Corp. 4½s '47	98¾	98¼	98½
Certain-Teed Products Corp. 5½s '48	89¾	88¼	88⅝
Champion Paper & Fibre Co. 4¾s '50	104½	104½	104½
Champion Paper & Fibre Co. 4¾s '50	103¾	103¾	103¾
International Paper Co. 6s '55	105	104¾	104¾
International Paper Co. 5s '47	103⅜	103⅜	103⅜
Mead Corp. 4½s '55	....	....	....
West Virginia Pulp & Paper Co. 3s '54	....	....	....

New York Curb Exchange

High, Low and Last for Week Ending Aug. 22, 1942

STOCKS

	High	Low	Last
American Box Board Co.	....	....	....
Brown Co., pf.	....	....	....
Great Northern Paper Co.	28½	28½	28½
Hummel-Ross Fibre Corp.	3	3	3
National Container Corp.	8¼	8¼	8¼
St. Regis Paper Co.	1⅜	1¼	1¼
St. Regis Paper Co., pf.	110	110	110
Taggart Corp.	2¼	2¼	2¼

BONDS

American Writing Paper Co. 6s '61	82½	82½	82½

S. D. Warren Nets $2.75

S. D. Warren Company reports for six months ended June 30, 1942, consolidated net profit of $279,702, equal to $2.75 a share on the capital stock after charges and taxes of $246,500, estimated at 50 per cent, compared with $248,220, or $2.45 a capital share, in the first half of 1941. Net sales were $6,822,059, against $6,452,010 in the first six months of 1941.

Escanaba Profits Up

The Escanaba Paper Company for the six months to June 30, reports a net income of $128,181, compared with $111,416 in six months to June 30, 1941.

Bowater's Earnings Off

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., August 24, 1942—Net income of $942,678, as compared with net income of $1,009,847 in the previous year is shown in the annual report of Bowater's (Newfoundland) Pulp and Paper Mills for 1941. Total income was $3,031,671, as compared with $2,983,505 in the previous year and provision for depreciation and depletion was $878,649, as compared with $730,192. Bond interest charges were $1,193,954 against $1,227,142, and amortization write-off was $16,390 against $16,324. Total fixed charges were covered 1.78 times against 1.81 in 1940.

Preferred dividend payments were resumed in 1941, disbursements totalling $464,800, or 22.35 cents on the £1 par preferred that became cumulative from January 1st, 1941.

Net working capital at the end of 1941 was $7,471,906 against $7,761,229. Cash was $434,520 against $520,023; accounts receivable $4,808,409 against $3,351,615; inventories 6,055,950 against $6,064,589. Outstanding funded debt was reduced to $27,124,615 from $27,456,310 the previous year. Gross fixed assets at the end of 1941 were $46,452,736 against $44,707,826 in 1940.

Shareholders Form Committee

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., August 24, 1942—A protective committee has been formed representing the preferred shareholders of Quebec Pulp and Paper Corporation, whose two ground wood mills at Chicoutimi, Que., have been idle for a long time. This committee is composed of Rene Morin, Arthur Campbell and Gerald Ryan. Following the formation of the committee, it is reported, representations were made by it to the company to the general effect that steps should be taken forthwith, either by liquidation or any other method, to meet the claims of the preferred shareholders, with the intimation that unless some such steps were taken forthwith the matter would be brought to the courts.

It is said that the company requested some further delay in the matter pending the outcome of certain negotiations involving the Aluminum Company which is proceeding with hydro-electric plans that contemplate the flooding of a part of the company's limits, and the Quebec government which has a claim of approximately $1,800,000 against the company.

Interests in close touch with the situation appear sanguine as to a satisfactory solution of the problem.

Pacific Mills Increase Earnings

VANCOUVER, B. C., August 24, 1942—Pacific Mills Ltd., British Columbia pulp and paper company owned 93% by Crown-Zellerbach Corporation of San Francisco, contributed $1,219,584 to consolidated earnings as shown in the parent company statement for the year ended April 30, 1942. This compared with $847,313 so contributed in the preceeding year.

The parent company report brings out that $346,553 or 28% of the $1,219,584 realized from Canadian subsidiaries, less a Canadian withholding tax of $51,983, was received in the form of dividends, the balance being reinvested by those companies in properties and additional working capital. In the previous year 56% was received by the parent company in dividends.

The Canadian subsidiaries (Pacific Mills Ltd. and its wholly owned merchandising subsidiary, the Hudson Paper Company, Ltd.) were responsible for 11% of Crown Zellerbach Corporation consolidated profit, the $1,219,584 representing Pacific Mills Ltd. earnings after deduction of the minority 7% interest.

Abitibi Earnings Decline

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., August 24, 1942—In the first seven months of 1942, Abitibi Power and Paper Company earned $328,948 more profits available for depreciation and interest than in the like 1941 period —$4,953,232 compared with $4,624,284.

The trend of earnings in recent months, however, has been downward. In the first three months of this year, profits, at $2,668,258, were $985,821 above the initial quarter of 1941, while decreases were shown in the latest four months, the decline as compared with a year ago, having been $656,873.

Earnings in the final five months of 1941 were the heaviest on record for the company, aggregating $5,276,129, the last four of the five months being well above a million dollars each. Net earnings for July, 1942, were less than half of any of the final four months of 1941. It is officially indicated that the company's shipments of products in August will fall below July and be about one-third less than in July, 1941.

United Paperboard Earns $1.33

The United Paperboard Company and subsidiaries for the year to May 30, reports a net profit of $371,375, equal, after dividend on 6% non-cumulative preferred stock, to $1.33 each on 240,000 shares of common stock. This compares with $49,045, or $5.61 a share, on 8,733 preferred shares reported for preceding fiscal year. Liability for Federal income taxes in past year has been accrued upon basis of rates established for 1941. No effect has been given for higher rates which may apply to five months ended May 30, 1942, as contemplated in Revenue Act now being formulated. Current assets on May 30, 1942, amounted to $1,970,503 and current liabilities to $406,238.

Gaylord Co. Votes Dividend

The Gaylord Container Corporation has voted an extra dividend of 12½ cents, in addition to the regular quarterly dividend of 12½ cents on the common, both payable September 15 to stock of record August 31. Similar extras were paid in preceding quarters.

Crown-Zellerbach Pays Notes

The Crown-Zellerbach Corporation has paid off $1,000,000 of notes due February 1, 1945, leaving $4,000,000 of notes payable to banks outstanding on July 31, according to advices received from San Francisco.

ASPHALT SPECIALTIES FOR *PROMPT DELIVERY*

If you are having trouble obtaining asphalt specialties for use in paper production, let Wishnick-Tumpeer, Inc. meet your needs.

Our two modern, strategically located refineries are producing at full capacity to meet vital war demands, but we have the extra facilities to fill your orders also.

In addition to a complete line of asphalt specialties for use in waterproofing, saturating, laminating and coating paper and paper products, we can also make immediate delivery on a wide variety of asphalt compounds especially produced to the specifications of individual paper manufacturers.

These are all PIONEER Asphalts, famous for their quality for nearly half a century. They are produced by the most modern methods from materials selected and tested for basic inherent qualities and their adaptability to specific industrial uses. In addition to the cooperation of our experienced service staff, we offer you the facilities of our up-to-the-minute research and product development laboratory. Write, phone or wire today.

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New York, 295 Madison Avenue • Boston, 141 Milk Street • Chicago, Tribune Tower • Cleveland, 616 St. Clair Avenue, N. E. • Witco Affiliates: Witco Oil & Gas Company • The Pioneer Asphalt Company • Panhandle Carbon Company • Foreign Office, London, England

CONSTRUCTION NEWS

Under limitation order L-41 all projects involving expenditures of more than $5,000 must be specifically approved by the War Production Board. The status of projects reported herewith under the provisions of the order is not known.—EDITOR.

St. Louis, Mo.—The Stumpenhagen Corrugated Paper Box Company, 1130 Benton street, manufacturer of corrugated paper boxes and containers, has concluded arrangements for purchase of industrial property at Clinton and Seventeenth streets, heretofore held by Omar Tool & Machine Company, consisting of a main two-story building and one-story extension, recently constructed, about 35 x 115 feet. New owner will take over property at once and plans to occupy at early date for expansion. It is understood that present plant will be removed to new location, with installation of equipment and facilities for considerable increased output.

Richmond, Va.—The Randolph Paper Processing Corporation, recently organized with capital of $50,000, plans early operation of local plant for the manufacture of a line of paper specialties. New company is headed by Roy P. Bumpass, 3426 West Grace street, Richmond.

Kingman, Ariz.—The General Fiber Products Corporation, Los Angeles, Cal., recently organized to construct and operate a mill at Kingman, as previously noted in these columns, is said to have plans nearing completion for initial units of new plant, and work is scheduled to be placed under way at early date. Plant will operate under a special process, using leaves of the yucca plant as raw material. It will comprise several one and multi-story units and is reported to cost over $200,000, with equipment. Herman L. Joachim, 1151 South Broadway, Los Angeles, consulting engineer, is in charge of project.

Chicago, Ill.—Union Bag and Paper Corporation, Woolworth Building, New York, N. Y., has concluded arrangements for the sale of its building at 3737 South Ashland avenue, Chicago, heretofore used for paper bag manufacture, storage and distribution. The structure is three-story, about 120 x 300 feet, totaling close to 135,000 square feet of floor space, and has been acquired by William Wrigley Jr. Company, chewing gum manufacturer, for a reported consideration of about $250,000. Union company will vacate the premises at once and will occupy another building in the city, it is said, for local converting and distributing plant.

Buffalo, N. Y.—The National Gypsum Company, 190 Delaware avenue, is running on a maximum capacity schedule at its fiber board mill at Mobile, Ala., with deliveries of fiber board approximately six months behind, owing to the heavy demand for insulation board and wall board of this type. Company also is operating on a heavy production basis at its paper mill at Newburgh, N. Y., used for paper stocks for wall board and plaster board service. Present schedules at both mills will be maintained indefinitely.

Baltimore, Md. — The Continental Roofing Mills, 1500 South Ponca street, manufacturer of roll roofing, roofing and building papers, etc., an interest of Ruberoid Company, 500 Fifth avenue, New York, N. Y., have plans for improvements, including installation of metal storage tanks and auxiliary equipment. Work is scheduled to be carried out at once.

Detroit, Mich.—The Detroit Sulphite Pulp and Paper Company, 9125 West Jefferson street, manufacturer of wrapping, tissue and other paper stocks, has secured a building permit for construction of new steam power house at mill, recently referred to in these columns, and work will be placed under way at once. W. J. C. Kaufmann Company, 10610 Shoemaker street, Detroit, has contract for erection.

Newark, N. J.—The American Tag Company, 151 Cortlandt street, Belleville, N. J., manufacturer of paper products, has arranged for the sale of its recently vacated plant at 111-119 Sussex avenue, Newark. It has been secured by the Columbia Engineering Company, which will use for another line of production. American company removed its plant to first noted address at Belleville, where increased production facilities have been provided. Plant is now running on a good production schedule, with considerable part of output for paper specialties for war service for the Government.

New Companies

Appleton, Wis.—The Marshall Paper Corporation has been organized to manufacture and deal in paper products. The incorporators are E. J. Schrage, Achilles Schloss and John N. Schneider, all of Appleton.

Worcester, Mass. — Lawrence Blanket Company, 9 Winter street, has been chartered with capital of 200 shares of stock, no par value, to manufacture fiber products of various kinds. I. S. Zelkind is president.

State Women's Law Applies

An announcement from the Illinois Department of Labor with reference to the Illinois Women's Eight Hour Law is of interest to Illinois members of the paper trade who employ female help. Attorney General George Barrett has recently released an opinion that the Illinois law applies to work done in Illinois even though such work may be in interstate commerce and be expected to be governed by the Fair Labor Standards Act. He stated that the Women's Eight Hour Law had not been superseded by the Fair Labor Standards Act and indicated that the statutory provisions of both are in no way exclusive of each other which would indicate that they can consistently stand together. The point stressed is that the Women's Eight Hour Law has a specific provision of a 48 hour work week limitation while the Wage-Hour law provides excesses of an undefined nature if overtime is paid.

Sweden Hard Hit

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., August 26, 1942—Sweden's pulp and paper industry has been especially hard hit by the war and the consequent loss of overseas markets, says a report to the Department of Commerce. Manufacture of wood pulp during 1940 declined more than 35 percent from that of 1939, and paper manufactures show similar drops in various kinds and grades.

The report says that only 1,966,728 metric tons of wood pulp of all types were produced during 1940 compared with 3,316,147 tons manufactured during 1939.

Newsprint production declined from 281,000 metric tons in 1939 to only 131,688 tons in 1940 and sulphate wrapping paper declined from 205,197 metric tons to 158,572 tons. Production of paper bags, however, increased from 29,585 tons to 40,850 tons, and the manufacture of corrugated board boxes showed only a slight change, remaining at 20,660 tons.

Criticism Explained

Charles M. Haskins, managing director of the National Association of Waste Material Dealers, has made public the following letter which he has just received from Leon Henderson, head of the Office of Price Administration:—

"Your letter of July 3 has been called to my attention.

"I think you are aware that the Office of Price Administration has at no time made any statement derogatory to waste material dealers or collectors as a group. For a year and a half, members of this industry have worked closely with us in devising and improving regulations which would insure price stability in this important field. We have at all times found them cooperative, and honestly interested in promoting the public welfare.

"The Office of Price Administration is well aware of the significant role that the scrap dealer and collector play in our war economy. The record-breaking levels of scrap production over the past two years testify better than any words of praise to the efficiency of the industry under very difficult conditions.

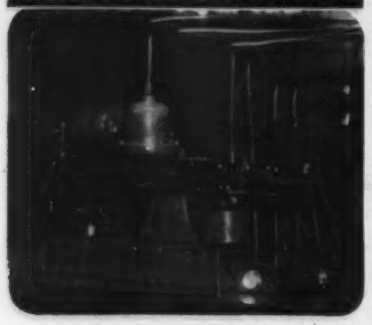
"Many unfounded charges against dealers have recently been given prominence. Uninformed persons have seen piles of material in scrap dealers' yards, and have charged hoarding—not knowing that in many instances the dealers were merely awaiting shipping instructions, and failing to understand that one of dealers' functions is to accumulate volume for economical shipment. Many persons have complained that collectors or dealers were profiteering because the prices they paid were lower than Office of Price Administration ceilings—not realizing that much preparation, handling, and transportation are required before scrap materials are in the state and quantity and at the location where the ceiling price applies, and, further, failing to realize that because of necessary restrictions upon use, many of the materials are now selling below ceiling prices, even in the final sale to a consumer.

"This is not to say that all members of this industry have been blameless with respect to hoarding and profiteering. It is to say that any blanket indictment of the industry is unfair, and indeed unpatrotic in that it discourages the honest and hard-working men who form the greatly preponderant majority of the industry from the performance of their supremely vital part in winning the war."

DESIGNED FOR DEPENDABLE, EFFICIENT, ECONOMICAL PERFORMANCE UNDER ALL OPERATING CONDITIONS - IN THE POWDER PLANT AS WELL AS IN THE PAPER MILL

THE APPLETON MACHINE COMPANY
APPLETON WISCONSIN

Simple, Easy Control of SHEET MOISTURE CONTENT



A New Kind of

PRESSURE REGULATOR

IT PAYS to have a good pressure regulator on any paper machine, but it pays even better to have ARMSTRONG-STAMM MOISTURE CONTROL! Instead of limiting the control solely to maintenance of UNIFORM PRESSURE, the Armstrong-Stamm System actually varies the pressure to automatically produce UNIFORM SHEET MOISTURE CONTENT!

Armstrong-Stamm Moisture Control equipment is built especially and solely for paper machines. Units are designed for fully automatic operation but are also instantly responsive to manual operation at the will of the machine operator. And while units are highly sensitive to the condition of the sheet, the equipment itself is of rugged construction and is easily understood and manipulated by machine operators. All of the equipment has been thoroughly proven in typical mills and is sold on a basis of complete satisfaction guaranteed. We will be glad to send you detailed information.

Armstrong also offers complete engineering service and equipment for modernizing machine drainage systems and for applying graduated temperature control to machine dryers. Write to ARMSTRONG MACHINE WORKS, 818 Hoffman St., Three Rivers, Michigan.

ARMSTRONG

TRADE MARK

ARMSTRONG-STAMM PAPER MILL ENGINEERING DIVISION

DRYER DRAINAGE SYSTEMS
MOISTURE CONTROL SYSTEMS
GRADUATE TEMPERATURE CONTROLS
STEAM TRAPS • HUMIDIFIERS

With Whitings 60 Years

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., August 24, 1942—At 81, Enos D. Smith, of 197 Brown Avenue, on Saturday, August 15, rounded 60 consecutive years in the employ of the Whiting Paper Company.

Foreman of the rag room of Whiting's No. 1 mill, Mr. Smith entered the service of the company in 1882, the first year he came to Holyoke from Moira, N. Y., where he was born, March 6, 1861, and has worked under three generations of the Whiting family.

Mr. Smith, despite his advanced years, enjoys excellent health and makes the daily trip to and from the mill by bus. He works in his garden in the evening and likes to read the newspapers and listen to the radio.

The only factory position he ever held was with the Whiting Company, makers of fine writing paper. During his early years he worked on his father's farm at Moira and coming to this city was hired to work on the loft at Whiting's No. 2 mill. He later switched to the rag room of which he has been foreman for 48 years. As many as 55 employees have been in that department under his supervision.

President of the company when Mr. Smith first took up employment there was the late William Whiting, who served in Congress. The veteran employee served under Mr. Whiting's son, William F. Whiting, Secretary of Commerce during the Coolidge administration, who died several years ago. Now, Secretary Whiting's sons, William, Edward and Fairfield, are the mill officials.

Many changes have taken place in the papermaking industry since the veteran saw the inside of his first mill. He also admits life in general has changed plenty since he was a boy and he wonders what the world will be like 80 years from now.

Long service records have been held by many Whiting workers, but Mr. Smith's is the longest, it was said at the plant where officials praised him as a loyal employee.

No Paper Shortage

"Last Frebruary the nation was warned," says the *Recorder*, the weekly news letter of the Foxboro Company, "that because of the enormous requirements of the armed forces, both for paper containers and for pulp, a paper shorage existed and every patriotic American must reduce the use of paper to the minimum.

"False alarm! There is plenty of paper in this country, plenty of mill capacity, plenty of raw material available, and the pulp and paper industry, as well as the printing industry and all others affected, would be very much obliged if the nation would use *more* paper and send the mills some nice fat orders.

"The explanation of the false scare is rather involved. The warning was issued in good faith and based on statistics which at that time seemed reliable. Our company immediately cooperated by taking all possible paper-saving measures, and *The Recorder* helped to broadcast the warning. Now that the scare has passed we want to do our part in removing the false impression and to help our friends in the pulp and paper industry recover the momentum which was lost.

"It is not the purpose of this paragraph to urge a return to the paper-wasting habits of other days. Because of shipping conditions and other wartime circumstances we should conserve paper and everything else that has value, putting such things to good use and not wasting them.

"But so far as the proper and legitimate uses of paper are concerned, for business and industry, the false alarm is over."

N. E. Paper Men To Meet

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., August 24, 1942—Following the announcement of the National Paper Trade Association that its annual fall meeting in Chicago is to be replaced this year by regional meetings, plans were made to hold the first of the coast-to-coast gatherings in Boston Tuesday, August 25.

All paper distributors in New England have been invited to take part in a discussion of industry problems at the Hotel Touraine, this city, from 1:30 to 5 P.M. Special consideration, under the leadership of the New York staff of the National Paper Trade Association, will be given to recent WPB regulations.

It is expected that between 75 and 100 paper men will be present.

A luncheon meeting of the Board of Directors of The New England Paper Merchants Association has been called by Harry J. Dowd, president of the Association, to be held at the Hotel Touraine at 12 o'clock the same day.

Canada May Use Plan

Canada may soon adopt a plan developed in the United States for stimulating popular response to war savings, enlistment in the armed forces, conservation and other wartime activities. In a letter addressed to the New York & Pennsylvania Company, New York, the National War Finance Committee of Canada has just asked the company's permission to initiate in Canada a volunteer war advertising campaign in support of national war projects similar to that launched in this country through the Nypen Patriotic Slogan Contest. As in the United States, printers and lithographers would be used to reproduce some patriotic slogan or message on every piece of printed matter, thus directly helping to promote the war effort.

"We shall, of course, be very happy to have the idea of the Nypen Patriotic Slogan Contest utilized on your side of the border," states Eustis Paine, president of the New York and Pennsylvaia Company, in writing to R. J. Dunlevy, public relations advisor to the Canadian War Finance Committee. "We are all working for a common end and we are only too delighted if we have made a constructive contribution to your work in Canada."

To Hold Chemical Show

Regarded as an important contribution of the chemical industry to the war-time effort, the National Chemical Exposition will be held November 24 to 29 at the Hotel Sherman in Chicago.

Added importance will be given the show, second to be sponsored by the Chicago Section of the American Chemical Society, because of the conference to be held in conjunction to be addressed by leaders of the industry, educators and other authorities. The program is now being arranged by the conference committee.

Victor Conquest, director of research for Armour & Co., who is chairman of the show committee, anticipates an attendance of approximately 20,000 from all sections of the country including research chemists, executives of industrial plants, engineers, purchasing agents, government specialists and others who will be afforded the opportunity of making valuable contacts at the show and conference.

He announces that the transfer of the show from the Stevens Hotel to the Hotel Sherman will be a boon for the exposition, providing adequate space for the display of commercial and educational exhibits and also a Loop location, accessible to the retail and amusement center.

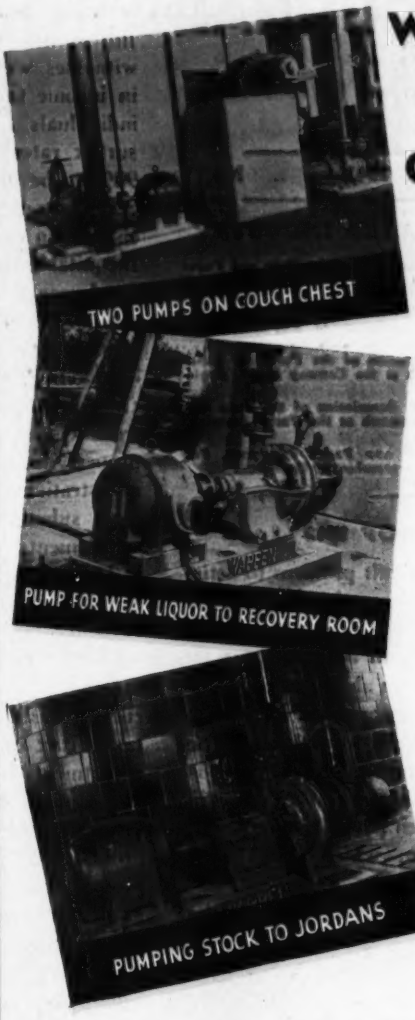
The shift in location was due to the acquisition by the War Department of the Stevens Hotel, which has become a training school for Army purposes.

"This year's show will be twice as large in the number of exhibits and floor space as the first exposition held by the Chicago Section in 1940," said Mr. Conquest.

"We ascribe the increased interest on the part of manufacturers to the fact that the government is looking to them as important in the prosecution of the war. They are expected to provide alternates for many critical materials and new processes.

"We are planning an interesting and momentous conference which will be in the nature of a forum. This parley will get underway at the opening and continue through the entire period of the show. A committee is now preparing a schedule of industrial motion pictures which will also add to the interest of the exposition from an educational standpoint."

"A WARREN PUMP WORKS UNDER ANY CONDITIONS"



Thanks, Mr. Engineer . . . even if our own claims are more modest! This comment was recently made by the Chief Engineer of one of the largest manufacturers of fine papers and was based upon conclusions arrived at after many years experience in the Paper Mill field. Our installations in this mill include some of the most difficult services and in each case the pumping equipment was engineered to fit the particular conditions under which it was intended to operate. Warren can build pumps to fit your job, too. Why not give us a chance?

WARREN STEAM PUMP COMPANY, INC.
WARREN, MASSACHUSETTS

PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.

Henry J. Berger
EDITOR

Vol. 115 August 27, 1942 No. 9

COMING EVENTS IN PAPER INDUSTRY

New England Section. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

Delaware Valley Section. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

Lake States Section. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

Kalamazoo Valley Section. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

Technical Association of the Pulp and Paper Industry, Fall Meeting, Statler Hotel, Boston, Mass., September 29-October 1.

REVENUE ACT OF 1942

Levying heavy taxes is a difficult problem to satisfactorily solve. It has always been the declared objective of every revenue act, to so adjust the sliding scale of rates that taxation would be equitably distributed and based primarily upon ability to pay. Unfortunately, nothing approaching an ideal or even a satisfactory tax plan has ever been formulated. The problem today in devising the revenue act of 1942 is greater than ever, for today the largest revenue in history must be collected to even partially pay for financing the most costly war in which the United States has participated.

In commenting on proposals for war financing, the Chamber of Commerce of the United States, in its war tax number of the *Washington Review*, published August 15, states in part that, "Proposals for a Federal tax program designed to raise at least $12,000,000,000 in new revenue for war purposes were put before the Senate Finance Committee August 12 by four representatives of the Chamber's Committee on Federal Finance. Recommendations also were submitted for government bond issues and debt financing designed to hold inflationary borrowing from banks to a minimum. Measures were proposed to encourage the purchase of government securities by corporations, individuals, and other investors. It is expected that $12,000,000,000 in taxes would be yielded in a full year of operation of the Chamber program in addition to the $17,000,000,000 now produced by the present law. The Chamber program would yield about $6.3 billion additional revenue during a full year of operation, and about $4 billion during the current fiscal year. The Chamber witnesses criticized the House revenue measure not only as failing to produce adequate revenue for war purposes, but as interfering seriously with war production and failing to provide adequate control over inflation."

In its specific criticism of the House Bill the *Review* said that, "Among the provisions of the House Bill to which exception was taken by the Chamber witnesses were the following: (1) Heavy increase in income tax rates to be imposed retroactively on individuals. (2) Combined corporate normal and surtax rates of 45%. (3) Excess profits rate of 90% to be imposed upon a base which does not accurately reflect true excess profits. (4) Proposed changes in treatment of capital gains and losses. (5) Inequitable treatment of corporations operating on a fiscal-year basis. (6) 2% penalty tax on consolidated returns. (7) Proposed treatment of pension trusts. (8) Proposed excise tax on transportation of goods. (9) Changes in schedule of exemptions from estate and gift taxes. (10) Special estate tax treatment of community interests (in community property states). (11) Various technical and administrative provisions regarding which proposals were submitted by the Chamber for constructive amendments."

The recommendations outlined by the Chamber for war financing were: "The maximum possible revenues from taxes for the duration of the war to be obtained as follows: (1) Moderate increase in the taxation of individual incomes, to be imposed upon a current basis. (2) A corporate normal tax and war tax surtax of not more than 35% with appropriate adjustments for net incomes under $25,000. (3) Revision of the excess profits tax credits and relief provisions in order to define more accurately true excess profits. (4) The rates to be imposed upon excess profits must depend upon the balance of the tax program; for example, upon the rate to be imposed upon normal profits, whether only true excess profits will be subjected to excess profits tax rates, and whether a workable incentive savings plan is enacted. If other recommendations of the Chamber are adopted, then the highest practicable rates would be imposed upon excess profits, with the safeguard of preliminary brackets at moderate rates. (5) A retail sales tax, without exemptions (except for direct government purchases), at an effective rate of 10%, with appropriate adjustments for articles of first necessity. (6) A 5% withholding tax, collected at the source, on all compensations, dividends and interest paid to individuals. (7) A moderate rate of tax upon capital gains, with a shorter holding period. (8) Adequate provisions for the recognition of foreign war losses. (9) A number of technical changes in the basic tax law designed to cure inequities and make its provisions more workable. (10) A definite incentive savings system for both individuals and corporations. (11) Security issues designed to attract maximum additional borrowings of a non-infla-

tionary type, as from individuals, insurance companies, trust funds, savings institutions, and others. (12) The elimination of all non-essential government activities, and the elimination to the bone of essential non-war activities."

As representatives of the Treasury endeavored last week to make the 5% withholding tax on personal incomes adopted by the House more acceptable to the Senate, Senator Clark voiced what appears to be an important, valid objection of business men as a group. Senator Clark expressed the opinion that the Treasury proposal was not a guarantee that employers, as a whole, might be won over to the withholding tax. The employer would make returns to the Treasury quarterly and between payment dates would have to segregate the funds he had collected. This would mean special accounts, with the employer responsible for their safekeeping.

Powell River Employees Get Advance

VANCOUVER, B. C., August 22, 1942—An upward revision of wages has been granted by the Regional Control Board at Vancouver, B. C., to certain groups of employees at the Powell River, B. C., plants of the Powell River Company's pulp and paper mill. Announcement of the revision approval was made by officials of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers' Union.

The union said that the re-classifications had been agreed upon last April between the company and the Union, but refused by the Board on first application. Another brief was prepared and submitted to the Wage Board by a union delegation, and now the increases have been authorized.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks, 1942		Corresponding Weeks, 1941	
July 11	69.7	July 12	95.2
July 18	81.7	July 19	100.7
July 25	80.2	July 26	101.9
August 1	79.8	August 2	100.5
August 8	81.6	August 9	99.7
August 15 (Prelim.)	79.8	August 16	99.0

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1941	85.6	89.7	92.2	96.0	98.7	99.3	94.2
1942	104.5	103.9	102.9	100.3	95.4	87.3	75.7

Year	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1941	101.0	99.7	105.2	106.2	100.4	97.4
1942	...	...	...	...	...	...

COMPARATIVE YEARLY SUMMARIES

	1935	1936	1937	1938	1939	1940	1941	1942
Year to Date	68.4	77.9	87.4	68.2	78.7	87.0	94.0	94.4
Year Average	69.9	80.4	79.8	71.5	83.4	85.6	97.4	...

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS †

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1937	83	89	89	91	88	80	69	77	72	70	57	47	75
1938	56	63	63	60	60	59	59	60	70	73	67	61	64
1939	65	73	76	74	69	73	68	77	82	91	88	77	77
1940	78	75	74	76	82	85	77	79	78	85	82	77	78
1941	81	88	89	89	91	94	92	98	95	99	98	90	92
1942	102	101	101	95	82	72	68	..	..	..	..	..	..

Week ending July 11, 1942—52
Week ending July 18, 1942—71
Week ending July 25, 1942—74
Week ending Aug. 1, 1942—76
Week ending Aug. 8, 1942—75
Week ending Aug. 15, 1942—73

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

EXPORTERS
OF AMERICAN PULP

TO
BRITAIN
SOUTH AMERICA
AND ALL WORLD MARKETS

LYDDON
& COMPANY
(AMERICA) INC.

51 EAST 42ND STREET
NEW YORK CITY

How to control slime and preserve pulp

*with Du Pont Lignasan**

PLANT-SCALE tests and commercial use over a period of more than two years have demonstrated the effectiveness of Du Pont *Lignasan* for slime control and pulp preservation. Only a few ounces per ton of fiber are needed, as Lignasan contains one of the most powerful fungicides and bactericides known.

Two laps of pulp. Above is one made under controlled conditions with "Lignasan." Fungi caused the other to discolor.

FOR SLIME CONTROL—*Lignasan* frequently is applied as a beater treatment in paper mills. This controls slime in pipes and storage chests, as well as on the wet end of the paper machine. Add from 3 ounces to 5 ounces per ton of fiber, dry basis. At some operations it is preferable to bleed *Lignasan* solution into the stock as it enters the machine stock chest or at the point where different kinds of pulp are mixed together.

Slime occurring in the white water system of pulp mills can usually be controlled by adding *Lignasan* solution near the point where slime formation is heaviest. Good results are being obtained by using it at the rifflers.

PULP PRESERVATION DURING THE STORAGE OR TRANSIT—Effective control of fungi that deteriorate laps and thick stock may be obtained with *Lignasan*, according to tests conducted during the past five years in pulp mills in this country and in Sweden.

Expensive equipment is not required for treating laps—usually it consists of a simple perforated pipe applicator, suspended above the wet machine, with a control valve in a pipe connecting with a supply of *Lignasan* solution in a 50-gallon drum or barrel. Feed the solution at a rate to add from 4 ounces to 8 ounces of *Lignasan* per ton of fiber, dry basis, the exact dosage to be governed by the season and the length of time protection is desired.

To protect slush pulp against deterioration by fungi and bacteria during storage or transit, mix *Lignasan* with the stock, using a slug dose of 4 ounces to 6 ounces per ton of fiber, dry basis.

NO COMPLICATED EQUIPMENT NEEDED—*Lignasan* requires no complicated or expensive equipment for application. It is easy to handle. Operators usually prepare a concentrated stock solution or paste so that the proper dosage can be quickly and accurately measured.

Write for more complete information on specific applications, E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Department, Wilmington, Delaware.

*Reg. U. S. Pat. Off.

DU PONT
REG. U.S. PAT. OFF.

LIGNASAN
Reg. U. S. Pat. Off.

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Analysis of Sulphate Black Liquor

TAPPI Tentative Standard T 625 m-42

This method deals with the analysis of black liquor separated from the pulp in the blow pits, diffusers and washers of the sulphate process. This liquor contains a large part of the alkali charged to the digester, in the spent form, consisting largely of sodium carbonate, organic sodium compounds, free sodium hydroxide, and sulphur in various combinations, as well as small amounts of sodium chloride, silica, and minute amounts of other impurities, such as lime, iron oxide and alumina.

The composition of sulphate black liquor tends to change on standing, especially if access of air is permitted. Although storage in completely filled and stoppered bottles serves to arrest such change, the tendency should be kept in mind and, in general, the analysis should be started and carried through without delay after sampling in order that results shall have maximum significance.

Use recently boiled and cooled distilled water for all dilutions of liquor sample throughout the analysis.

Report all results of chemical determinations in terms of grams per liter at 60° F. or, if required, in percentage by weight, to three significant figures.

Gravity

Determine the Baumé gravity of the sample at 60° F., by means of a suitable hydrometer. Convert to specific gravity from tables or by the formula:

$$\text{sp. gr.} = \frac{145}{145 - \text{Bé.}}$$

Note: For maximum accuracy, determine the specific gravity at 60° F. by means of a pycnometer, compared with water at the same temperature.

Total Solids

Pipet 10 ml. of the liquor into a tared platinum evaporating dish and weigh quickly to the nearest 5 mg. Place in an oven at 105° C. for 24 hours, cool in a desiccator, and weigh rapidly. Calculate the percentage of total solids and multiply by 10 times the specific gravity to obtain grams per liter.

Note: If silica is to be determined, the use of platinum is essential; otherwise porcelain may be employed. Ashing the alkaline mixture results in excessive attack on the porcelain, however, and generally speaking, the use of platinum dishes is highly preferable.

Sulphated Ash and Organic Matter

Starting with a cold muffle furnace or a very low flame, heat the residue from the total solids determination until the organic matter is largely, but not completely, destroyed. Do not heat excessively. Cool, moisten the residue with a few milliliters of water, add a drop of methyl orange indicator solution and conc. H_2SO_4, drop by drop, until there is an excess as shown by the bright pink color developed. Heat slowly to evaporate to dryness and thereafter heat at a moderate temperature until the excess H_2SO_4 has been removed. Finally, ignite quite strongly until all the organic matter is destroyed but again avoid excessive heating. Cool in a desiccator and weigh. Moisten with a few milliliters of water and add a drop or two of methyl orange indicator. If the solution is acid (red), make slightly alkaline with NH_4OH to neutralize bisulphate, evaporate to dryness, and again ignite, cool and weigh. Assuming the residue to be pure Na_2SO_4, multiply its weight by 0.563 to convert to NaOH and calculate the latter as a percentage of the total solids. Report as *sulphated ash calculated as NaOH*. Report the difference between this value and 100 as the percentage of organic matter in the total solids.

Silica

Moisten the sulphated ash with 5 ml. of conc. HCl and, after half a minute or more add 50 ml. of hot water. Break up the residue with a stirring rod and bring the solution to boiling for a few minutes, making sure that the insoluble residue is completely disintegrated. Filter through a fine-grained, ashless filter paper into a 100-ml. volumetric flask, transferring the residue quantitatively to the filter by scrubbing the sides of the dish with a rubber policeman and finally wiping out with a piece of quantitative filter paper which is then placed in the filter with the rest of the residue. Wash the residue on the filter with hot dil. HCl (1:20) and finally with water until the flask is filled to the mark. Transfer the filter paper and residue to a platinum crucible, dry, gently char off the paper, and finally ignite strongly to constant weight at 900° C. or more. Cool in a desiccator after each ignition and weigh quickly. Moisten the ignited residue with 1 ml. of water, add 4 or 5 drops of dil. H_2SO_4 (1:2) and finally, with care, about 5 ml. of HF. Evaporate off the HF in a hood without boiling the liquid. Then increase the heat and fume off the H_2SO_4, finally igniting strongly in the full flame of a Bunsen or

Tirrill burner. Cool in a desiccator and weigh. The loss in weight is the weight of SiO_2 present.

Calculation: Grams of $SiO_2 \times \frac{1000 \times \text{sp. gr. of black liquor}}{\text{wt. of original 10-ml. sample}}$ = grams of SiO_2 per liter.

Total Sodium (Na_2O)

After filling to the mark and thoroughly mixing the contents of the 100-ml. volumetric flask containing the filtrate and wash water from the SiO_2 determination, remove a 1-ml. aliquot with an accurate pipet and proceed according to TAPPI Method T 623m, Determination of Sodium by the Uranyl Zinc Acetate Method.

Calculation: Grams of precipitate $\times$ 0.02015 $\times \frac{\text{sp. gr. of black liquor} \times 100{,}000}{\text{wt. of original 10-ml. sample}}$ = grams of total Na_2O per liter.

Note: This may be used as an approximate index of the total recoverable alkali, although it is usually somewhat high due to the presence of NaCl, etc.

Aluminum and Iron Oxides

Pipet a 50-ml. aliquot of the accurately diluted filtrate from the SiO_2 determination into a 250-ml. beaker. Dilute to about 100 ml., add a few drops of methyl red indicator solution and heat to boiling. Neutralize by dropwise addition of conc. NH_4OH to the yellow end point and add a drop or two in excess. Let stand until the precipitate has completely coagulated, filter through a quantitative filter paper and thoroughly wash the precipitate, quantitatively transferred to the filter paper, with hot water. Ignite strongly in a tared porcelain crucible, cool in a desiccator, and weigh as $Al_2O_3 + Fe_2O_3$.

Calculation: Grams of ignited oxides $\times \frac{\text{sp. gr. of black liquor} \times 2000}{\text{wt. of original 10-ml. sample}}$ = grams of $Al_2O_3 + Fe_2O_3$ per liter.

Sodium Sulphate

Pipet 25 ml. of the original black liquor into a 250-ml. beaker containing about 100 ml. of water. Let the pipet drain for at least 5 minutes. Neutralize with HCl, adding 5 ml. of concentrated acid in excess. Filter and wash the precipitated organic materials thoroughly with hot water, catching the filtrate and washings in a 400-ml. beaker. Boil the filtrate gently for 10 minutes and cool. Just neutralize to methyl orange by dropwise addition of conc. NH_4OH and then add 1 ml. of conc. HCl. Dilute to about 250 ml. and, with a stirring rod in place to minimize the danger of bumping, heat to boiling. To the briskly boiling solution, add dropwise and with stirring 15 ml. of 10% $BaCl_2$ solution. After partial settling, using a clean glass rod, add a drop of the mixture to a few milliliters of dil. H_2SO_4 in a test tube. If no precipitate is observed add more $BaCl_2$ to the original solution and again check to insure that an excess is present.

Maintain the solution near the boiling temperature for 10 or 15 minutes and then set aside to settle and cool for at least 1 hour. Filter through a close-grained, ashless filter paper and wash the precipitate on the filter with warm water until the wash water, acidified with HNO_3, gives no test for chloride with $AgNO_3$. Remove the filter paper and precipitate to a weighed platinum or porcelain crucible and, after drying and gently burning off the filter paper at lower temperatures, ignite to constant weight in an electric muffle furnace at about 800° C. or over an ordinary burner. Cool in a desiccator between weighings. As a check against possible reduction of some of the $BaSO_4$ during ignition, moisten the ignited residue with a few drops of dil. H_2SO_4 and again heat, cool, and weigh. Calculate the weight of $BaSO_4$ thus found to Na_2SO_4 and express as grams per liter.

Calculation: Grams of $BaSO_4 \times 0.6086 \times 40$ = grams of Na_2SO_4 per liter

Total Sulphur

Pipet 5 ml. of the liquor into a weighed nickel crucible of about 50-ml. capacity, and weigh rapidly to the nearest 5 mg. Add cautiously, a little at a time, about 4 grams of sodium peroxide (Na_2O_2). Guard against mechanical loss through effervescence by keeping the crucible covered with a small watch glass while the reaction is actively progressing. When all the Na_2O_2 has been added, mix the contents of the crucible with a glass rod and finally rinse off the cover glass, the stirring rod and the sides of the crucible into the bulk of the solution with a fine jet of water from a wash bottle, keeping the volume used for this purpose to a minimum. Evaporate to dryness on a hot plate and thereafter place the crucible in an electric muffle furnace or in a sand bath over a small flame. Heat slowly to a temperature not exceeding dull red heat until the organic matter is destroyed and the mass is in clear and quiet fusion. If this condition is not achieved, add another portion of Na_2O_2. Do not heat excessively. Remove the crucible from the heat and rotate in an inclined position during cooling to distribute the melt over the sides and bottom of the crucible upon solidification. After cooling, dissolve the melt in water and filter off any insoluble material, collecting the filtrate and washings in a 400-ml. beaker. Just neutralize the solution to methyl orange with HCl and add 1 ml. of conc. HCl in excess. If a turbidity of free sulphur is formed on acidification, or if the odor of H_2S is at all evident, discard the sample and make another determination employing a larger proportion of Na_2O_2. Dilute the solution to about 250 ml. and, with a stirring rod in place, boil gently for 5 minutes. Proceed with the determination of the sulphate as $BaSO_4$ as described previously under Sodium Sulphate.

Calculation: Grams of $BaSO_4 \times 0.1373 \times \frac{1000 \times \text{sp. gr. of black liquor}}{\text{wt. of 5-ml. sample}}$ = grams of total S per liter.

Alkalinity

(*a*) Total Alkali

1. *Conductometric Titration Apparatus:* A suitable but inexpensive type of apparatus operating on ordinary 110-volt, 60-cycle lighting current has been described by McElhinney, Whittemore, and Lynch *(1)*. It consists of two ½-inch disk-shaped electrodes of bright platinum adjustably mounted in a vertical position; a 110-18 volt doorbell transformer; a coarse (500-ohm) and a fine (50-ohm) radio-type rheostat in series, for adjusting to constant voltage; a 30-ma. a.c. ammeter; and a device for measuring the voltage across the electrodes. A 15-volt, 2000-ohm per volt, voltmeter or a unit consisting of a rectifier and a 1-ma. d.c. ammeter has been used for the purpose. A switch is used to close the circuit

during readings and this may remain closed continuously during a titration. The proper separation of the electrodes will depend on constructional features of the apparatus and conductivity of the solution employed, and must be adjusted to suit the case at hand. The adjustment, which may vary in the neighborhood of a half to one inch, must not change during a titration. All electrical equipment except the electrodes may be assembled and mounted in a convenient case. A 250- or 400-ml. beaker, preferably equipped with a mechanical stirrer, serves as the titration vessel.

2. *Procedure:* Pipet 10 ml. of the liquor into a weighed 50-ml. beaker and weigh rapidly to 5 mg. Transfer completely with water to a 100-ml. volumetric flask, dilute to the mark and mix thoroughly. Place 150 ml. of water in the titration beaker and pipet 20 ml. of the diluted liquor (corresponding to 2 ml. of the original) into the beaker. The electrodes must be completely submerged in the solution. If this is not possible with the volume specified, water may be added.

Start the mechanical stirrer, switch on the apparatus, and adjust the rheostats until the a.c. ammeter reading is between 15 and 20 ma. Note the reading on the voltmeter corresponding to this initial setting. Maintain this reading at the same constant value by readjustment of the resistances for all ammeter readings during the subsequent titration. Add 0.1 *N* acid (HCl or H_2SO_4) in small increments of 0.5 to 2 ml., depending on the accuracy and the number of readings desired, and read the ammeter at constant voltage after each addition of acid until the titration is complete. The end of the titration is reached when the rate of change in conductivity for 4 or 5 successive readings is constant and characteristic of the standard acid added.

Plot the ammeter readings as ordinates against the volume of reagent added. The final points obtained should define a straight line (the acid line). Preceding this straight line segment there will be a curved portion and preceding this final curve another linear segment should appear. The intersection of these projected straight line segments defines the end point of the titration and represents the neutralization of all the NaOH, Na_2S, Na_2CO_3, and organic sodium salts, as well as that of any silicate and sodium sulphite (to bisulphite) that may be present. The Na_2SO_4 and $Na_2S_2O_3$ are not involved in the titration. Note the volume of acid corresponding to the intersection of the straight lines and calculate to total alkali as Na_2O. Addition of the Na_2SO_4 content as separately determined results in a value representing the total recoverable sodium content except as affected by the thiosulphate, silicate, and the other half of the sulphite. If separately determined, allowance for these constituents may be made.

Calculation: ml. 0.1 *N* acid × 0.0031 × 5000 × sp. gr. of black liquor / wt. of 10-ml. sample = grams of total alkali (Na_2O) per liter.

Note: The size of the sample to be used for analysis varies with the type of liquor and concentration of the electrolytes present. It should be such that the voltage-current relationships obtained fall within a proper range relative to the instrument used. In this respect, the above procedure may require some modification as will be indicated by preliminary trial.

(*b*) Alternative Method for Total Alkali

Pipet 10 ml. of the liquor into a weighed iron or platinum dish and weigh rapidly to 5 mg. Evaporate to dryness and then ignite over a burner or preferably in an electric muffle furnace. Heat slowly at first, finally bringing the temperature to about 800° C. until the organic matter is decomposed. It is unnecessary to burn off all the carbon resulting from breakdown of the organic compounds. After cooling, take up the residue with 50 ml. of hot water, breaking up the solid material as completely as possible with a stirring rod. Filter and wash the residue on the filter with another 50 ml. of hot water. Titrate the filtrate with standard 0.5 *N* HCl, using methyl orange indicator, for the approximate total alkali.

Calculation: ml. of 0.5 *N* acid × 0.0155 × 1000 × sp. gr. of black liquor / wt. of 10-ml. sample = grams of total alkali (Na_2O) per liter (uncorrected).

Notes: (1) The volume of acid required represents an approximate value for either the total alkali or the total recoverable alkali, uncorrected for controversions due to oxidation-reduction effects accompanying the incineration process. Depending on the conditions of ignition, oxidation of sulphide and thiosulphate to sulphate or the reverse process may occur, thus introducing uncertainty as to the exact significance of the above determination. To provide for this situation, proceed as follows:

Boil the solution which has been neutralized to methyl orange for 5 minutes to expel H_2S, cool, add a little starch-indicator solution and titrate with 0.1 *N* iodine solution. The amount of iodine consumed represents the thiosulphate content and the difference between this and the original thiosulphate content of the liquor is that formed or destroyed in the incineration process.

Let A = grams of $Na_2S_2O_3$ formed during incineration per liter of liquor;

then A = ml. of 0.1 *N* iodine solution × 0.0158 × 1000 × sp. gr. of black liquor / wt. of 10-ml. sample − grams of $Na_2S_2O_3$ per liter of original liquor

Add 1 ml. of conc. HCl to the solution after the iodine titration, dilute to about 250 ml., heat to boiling and proceed with the determination of sulphate as described previously under Sodium Sulphate. The difference between the sulphate content thus determined and that originally existing in the black liquor is that which has been formed or reduced in the incineration process.

Let B = grams of Na_2SO_4 formed during incineration per liter of liquor;

then B = (grams of $BaSO_4$ × 0.6086 × 1000 × sp. gr. of black liquor / wt. of 10-ml. sample) − grams of Na_2SO_4 per liter of original liquor

Taking cognizance of the fact that A and B as defined by the above may be either positive or negative, correct the approximate value for Total Alkali obtained as previously described, by the following formula:

Total alkali as grams of Na_2O per liter (uncorrected) + 0.436 B + 0.392 A = Total alkali as grams of Na_2O per liter (corrected).

As calculated, this value for *total alkali* includes neither the thiosulphate nor sulphate contents in the original liquor.

(2) A figure representing the *total recoverable alkali* may be derived from either the corrected or uncorrected value for *total alkali* by adding respectively the thiosulphate and sulphate contents (calculated to Na_2O) of the original liquor as separately determined or the thiosulphate and sulphate contents as determined after incineration as just described. The result thus obtained for the *total recoverable alkali*, as well as the corrected value for the Total Alkali, includes the sodium sulphite and sodium silicate contents.

(*c*) Active Alkali (NaOH and Na_2S)

Pipet 100 ml. of liquor into a 500-ml. volumetric flask containing about 100-150 ml. of CO_2-free water. Let the pipet drain at least 5 minutes. Add 100 ml. of 10% $BaCl_2$ solution. After partial settling, using

a clean glass rod, add a drop of this mixture to a few milliliters of dilute H_2SO_4 in a test tube. If no precipitate is observed add more $BaCl_2$ to the original solution and again check to insure that an excess is present. Dilute the mixture to the mark, mix thoroughly and set aside to allow the precipitate to settle.

Remove a 100-ml. aliquot of the supernatant solution and titrate potentiometrically, employing a glass electrode, with 0.5 *N* HCl until a pH of 4 or lower has been reached. Prepare a titration graph by plotting pH values as ordinates against volume of standard acid added.

Note the volume of acid required to reach a pH of 8.3, corresponding to the phenolphthalein end point and representing the neutralization of all the NaOH and conversion of sulphide to bisulphide. From this value together with that for the Na_2S content, as determined according to the following section, calculate and report the Active Alkali as grams of Na_2O per liter. A value for the NaOH content of the liquor may be found by difference.

Calculations:

Let A = Active alkali as grams of Na_2O per liter.
and B = Grams of NaOH per liter.
Then A = (ml. 0.5 *N* HCl × 0.0155 × 50) + (grams Na_2S per liter) × 0.397.
and B = (ml. 0.5 *N* HCl × 0.020 × 50) — (grams of Na_2S per liter) × 0.513.

Note: The values for the active alkali and the NaOH contents thus determined include strongly hydrolyzed sodium-organic compounds present in the supernatant liquor.

Sodium Sulphide

Pipet 50 ml. of the supernatant solution, prepared for the active alkali determination, into a 150-ml. distilling flask equipped with a dropping funnel and glass inlet tube with constricted orifice, both extending below the surface of the solution. The inlet tube is connected to a wash bottle containing water and thence to a tank of CO_2 or nitrogen. The delivery arm is connected to a condenser and thence to two wash bottles containing together an accurately measured volume of 0.1 *N* iodine solution. There should be a substantial excess of iodine solution present, the total volume used being at least 10 ml. more than that subsequently consumed in the reaction with the evolved H_2S, and the majority should be placed in the first wash bottle. A third wash bottle containing about 2 ml. (accurately measured) of 0.1 *N* thiosulphate solution serves to retain any iodine that might otherwise escape. Dilute the reagents in all three traps with water to afford an adequate depth of solution for efficient absorption.

Measure into the dropping funnel by means of a buret or Mohr pipet such a volume of standard normal acid (HCl or H_2SO_4) as will neutralize the sample to a pH of 4. The required amount may be estimated from the conductometric titration carried out for the determination of Total Alkali. With the apparatus and materials completely assembled, sweep out the system with a moderate passage of CO_2 or N_2 for a few minutes. Temporarily discontinue passing the gas and let the acid run into the sample, rinsing the funnel into the flask with about 20 ml. of water and taking care that no evolved gas escapes through the dropping funnel. Close the stopcock on the dropping funnel and resume the passage of inert gas at about 2 small bubbles per second. Submerge the bulb of the distillation flask in a beaker of boiling water and continue to boil the water gently for 30 minutes. Disconnect the flask from the condenser, rinse down the latter with a few milliliters of water and combine the contents of the three wash bottles. Titrate the excess iodine with 0.1 *N* thiosulphate solution, using starch indicator. The total volume of thiosulphate involved in reaction with the excess iodine includes that originally placed in the third wash bottle as well as that required in the final titration. Calculate the iodine solution consumed to grams of Na_2S per liter of original liquor.

Calculation: (ml. iodine — ml. thiosulphate) × 0.0039 × 100 = grams of Na_2S per liter.

Sodium Sulphite and Thiosulphate

Pipet 50 ml. of the black liquor into a 500-ml. volumetric flask. Let the pipet drain for at least 5 minutes. Add 25 ml. of glycerol, and precipitate the sulphide and most of the organic matter by the addition of an excess of a freshly prepared suspension of $ZnCO_3$, made by adding at room temperature and with constant stirring 150 ml. of 10% Na_2CO_3 solution to a solution of 30 grams of $ZnSO_4.7H_2O$. Add sufficient water to fill the flash ½ to ⅔ full, shake and let settle. Withdraw a drop of the clear liquid on a long stirring rod and test it in a little lead-acetate solution for complete removal of sulphide. If the drop causes a black precipitate, add more $ZnCO_3$ suspension to the flask, shake, and repeat the test. When absence of sulphide is shown, dilute the contents of the flask to the mark, mix thoroughly and let settle.

Filter at least 300 ml. of the liquid by means of suction through a Büchner funnel (fitted with a dry filter paper) into a dry flask. Pipet 100 ml. of the filtrate into a 500-ml. Erlenmeyer flask containing 100 grams of ice. Add a few milliliters of starch-indicator solution and quickly add sufficient acetic acid (predetermined by a rough test on a small measured portion of the filtrate) to acidify the solution. Immediately cover the neck of the flask with a rubber diaphragm—(e.g., a piece of dental dam)—and secure it in position with a rubber band. (The precaution of sealing the flask is especially necessary if large amounts of sulphite are present.) Puncture the rubber diaphragm with a needle, insert the tip of a buret containing 0.1 *N* iodine solution through the aperture thus provided, and titrate until the blue color produced on addition of 1 drop of iodine solution persists for 10 or 15 seconds. Denote the volume of 0.1 *N* iodine in milliliters as A.

To a second 100-ml. portion of the filtrate, also in the presence of ice, add 10 ml. of formalin (40% formaldehyde solution) and swirl to mix. Add starch and the same amount of acetic acid as used in the first titration and titrate with 0.1 *N* iodine solution until an end point of corresponding duration is reached. Call this titration B.

Calculations:

$(A-B) \times 0.0063 \times 100$ = grams of Na_2SO_3 per liter.
$B \times 0.0158 \times 100$ = grams of Na_2SO_3 per liter.

Note: In general, the value determined for thiosulphate by this method will be somewhat high, due to interference from organic reducing materials remaining in the supernatant solution.

Literature Cited

1. McElhinney, Whittemore and Lynch. "Conductometric Analytical Control in the Direct Causticizing of Soda Black Liquor." *Paper Trade J.* 106, no 10:37-41 (March 10, 1938).

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Steam Saved by Better Water Removal at the Presses

By W. G. MacNaughton [1]

Abstract

After stock preparation, papermaking consists essentially of a series of operations involving water removal by various means. Depending on the speed of operation and the weight of the paper, the concentration of fiber in the suspension delivered to the wire varies from 1 part in 100 of suspension to 1 in 500 parts. The water content of the finished paper may be from about 4% or less to about 10%.

Water is removed at the Fourdrinier wire by drainage and suction, at the presses largely by roll pressure assisted by the felts and by the action of suction presses. At the driers the water removal is completed by evaporation through the use of steam and in some cases assisted by vacuum applied to the entire drier section.

In the case of newsprint the water content of the sheet to the presses may be as low as 80 parts of water to 20 of dry fiber or as high as 88 parts of water to 12 parts of fiber, particularly if a suction couch is not used.

On the other hand the sheet from the presses, as it is delivered to the driers may carry as little as 60% water but may have 70% or more depending on the pressing equipment and its operation. This means that to bring newsprint to a water content of 8% as it comes from the driers, there would have to be evaporated from 1.3 to 2 pounds of water for each pound of paper made.

The action of the presses consists of two factors, the application of pressure per square inch of nip area and the duration of pressure as affected by the nip width and the speed of the sheet.

The studies of Rees and Wilson in 1925 on water removal by presses are reviewed in showing that the width of the nip under a given pressure is a direct function of roll diameter, thickness and plasticity of rubber covering. At any plasticity the nip width is a direct function of the square root of the pressure in pounds per lineal inch.

Data on fifty-two newsprint machines are shown, arranged in a series of tables in which the machines are listed in order of speed and in some of which there are various combinations of plain and suction presses.

The data include most of the factors involved in water removal such as roll diameter, and material, plasticity of covering, pressure per lineal inch, pressure per lineal inch per 100 f.p.m. speed, and the hole area percentage in the case of suction presses.

The sheet condition as percentage moisture-free fiber is shown from press to press and to the driers, as reported according to tests.

The desirability of developing an instrument to provide a continuous record of the water content of the sheet to the driers is suggested.

The amount of steam theoretically required to bring the sheet to 8% water content ranges, in the fifty-two paper machines reported, from 4260 to 6370 pounds per ton of paper, or in the proportion of 100 to 150.

It is emphasized that the true index of the efficacy of pressing is how little water is left in the sheet as it is delivered to the driers, rather than the rate at which water is removed at each of the presses.

After stock preparation the making of paper is essentially a series of operations involving water removal by the following methods:

1. By drainage under gravity and aided by atmospheric pressure.
2. By roll pressure on the traveling web supported by woolen felts, and also assisted by suction.
3. By evaporation through contact with steam heated cylinders, assisted by ventilation with currents of air, or by the application of vacuum to the entire drier section (Minton vacuum drier)

On the Fourdrinier machine drainage takes place on the wire part and is a combination of gravity, assisted by: (a) the action of the breast roll and table rolls, and (b) partial vacuum applied to the flat suction boxes and the suction couch over which the wire and paper web are carried.

When used, the weight of the dandy on the wire and the presser roll on the suction couch exert some effect in water removal by their pressure, and in compacting the sheet, thereby rendering the induced atmospheric pressure more effective.

Changes in Water-Dry Fiber Relation Due to Water Removal Operations

Wire Part

In the pulp suspension or stock delivered to the wire, the water-fiber relation differs quite considerably according to the class of paper, the basis weight and other factors. The range is from about 99.0% water, 1.0% fiber, to 99.8% water, 0.2% fiber, and the reason for the wide range is in a general way to enable a satisfactorily formed sheet to be made, especially where speeds approach 1000 f.p.m. and beyond.

As the paper leaves the dry end of the paper machine the range of water-fiber relation varies considerably. It may be from an approximate maximum of 10% water, 90% fiber, to as low as 3 or 4% water with 96 to 97% fiber. The variation depends chiefly on the particular use requirements of the paper.

On newsprint the pulp suspension or stock is delivered from the slice nozzle to the wire at a concentration of 99.4 to 99.5% water and 0.5% to 0.6% fiber.

Through drainage and suction, the formed web of paper is delivered from the couch at from 80 to 88% water to 12 to 20% fiber. The degree of water removal or reciprocally the dryness of the web from the wire part depends chiefly on the amount of suction applied, as well as on the speed of the wire, the width of the suction area (or in other words, on the length of time any part of the wire and web is sub-

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jected to the partial vacuum), and on the effect of the dandy and presser roll.

There are other factors which are known to affect the rate of drainage but which have been difficult to evaluate. Such are the proportions of sulphite and groundwood in the mixed stock, the fineness of the fiber elements and the temperature of the stock.

Presses

Considering water removal by the presses, an analysis of the operation shows that several factors are involved.

1. Pressure applied per square inch of contact area (increased from press to press)
2. Length of time any part of the traveling web is subjected to pressure.
3. Type of presses—plain or suction—in addition to other factors common to both.
   (a) If plain, the resistance of the felt to the flow of water expressed from the nip.
   (b) If suction, the width of the suction box, the location of the nip to the suction box, the hole area as percent of the total area, and the amount of partial vacuum carried.
4. Number of presses or nips to which the web is subjected.
5. Felt structure, its porosity and absorbency, as well as the means by which the felt is fitted to perform its function.

Index of Press Effectiveness

The condition of the paper to the presses being from 80 to 88% water and 20 to 12% dry fiber, it is the function of the press section to remove from the web as much of the water as economically possible without adversely affecting quality and deliver it to the driers as dry as possible.

The index of effectiveness of the press operation is consequently how little water is left in the sheet for the driers to evaporate, regardless of its condition initially.

On different newsprint machines, as may be seen from the appended list, Table II, there is a wide range in the water-fiber condition of the paper leaving the presses, it may be between 71.9 and 63.5% water—28.1 to 36.5% dry fiber.

It is very unfortunate that no instrument is commercially available by which a continuous record is made of the water content condition of the sheet as it is delivered to and from the presses. In 1925 *Technical Association Papers,* Rees and Wilson describe a moisture meter based on the principle of electrical conductivity which was being tried. Although it was said to show considerable promise, the development was never carried to completion.

Under existing practice, moisture tests can only be made by breaking the sheet in order to get a sample — and when a break occurs it is difficult to secure a representative sample since the press conditions are usually disturbed in getting the paper over the machine.

The importance of a record of the water condition of the sheet to the driers lies in the fact that it is this factor of water content that exerts the greatest influence in the quantity of steam called for in drying each ton of paper produced. It is true that there are other factors of importance, but they do not compare in importance with the quantity of water left in the sheet and which has to be evaporated by the driers.

Driers

For comparative purposes, it is assumed that the final condition of the newsprint leaving the driers is 8% water content and that the sheet in being dried is brought from its original condition to a final water content of 8%. It is assumed that the minimum steam required is 1.4 pounds of steam (at 240 deg. F) per pound of water evaporated in drying the paper. There are some conditions under which more steam might be necessary, but it is doubtful if under the most ideal circumstances a pound of water could be evaporated on the drying cylinders with less.

The importance of knowing the water condition of the sheet may be shown by comparing the quantities of steam required per ton of paper between the extremes mentioned; namely, 70% and 63.5% water content, in both cases dried to 8% water content.

Water Content from presses	Water Evaporated per lb. paper dried to 8% water content	Water Evaporated per ton of paper	Steam Required per ton of paper at 1.4 lb. per lb.
71.9	2.275	4550	6370
63.5	1.520	3040	4256
8.4	.755	1510	2114

An increase of 8.4% in the water condition of the sheet to the driers represents an increase of 2114 pounds steam per ton of paper, or for each 1% increase in the water content — from 63.5 to 71.9% the steam required increases 250 pounds per ton of paper. At an assumed cost of 40 cents per thousand pounds of steam this would amount to 10 cents more per ton for each additional 1% wetter paper to the driers.

Previous Press Studies

Prior to 1923 and during several years thereafter, a series of valuable studies were carried out by Rees and Wilson of the research staff of F. C. Huyck & Sons on the presses of both Fourdrinier and multi-cylinder paper machines and on the action of the felts.

The Fourdrinier machines investigated were a number making newsprint paper which as customary at that time were equipped with three and, in one case, with four plain presses. In these studies the various press factors were investigated and their relations correlated. As the studies proceeded it was found that a definite relation existed between a number of these and the width of the pressure zone or nip contact between the press rolls.

The factors involved are: (a) pressure applied per lineal inch of roll, (b) diameter of the press rolls, (c) plasticity or hardness of the roll covering, and (d) thickness of the roll covering.

Their relation to the nip width were expressed as follows:

The nip width increases directly
1. as the square root of the pressure in pounds per lineal inch of nip
2. as the average diameter of the press rolls
3. as the roll plasticity
4. as the thickness of the roll covering

1. Pressure per Lineal Inch of Roll Nip. The total pressure applied consists of the weight of the top roll, if so disposed to the bottom roll, and the additional pressure exerted by the application of weights and levers or by other mechanical means.

The pressure in pounds per lineal inch of nip is then the total weight divided by the length of the nip between the two rolls.

It was found that with the other factors being identical, such as diameter of rolls, hardness of rolls and thickness of roll covering, the width of the nip or the square inch area of nip contact is a direct function of the pressure per lineal inch.

2. Diameter of Rolls. In an investigation of the effect of roll diameter, using combinations of rolls 20 and 26 inches diameter, it was found that: (a) the nip width is directly proportional to the diameter of the rolls, if both are the same diameter, and (b)

the nip width will lie between the values for the two diameters, in a combination of two rolls of different diameters.

3. Plasticity or Hardness of Roll or Roll Covering. Tests with rolls of the same diameter but with bottom rolls of different degrees of plasticity, using the same pressure per lineal inch of nip, and at the same speed, plotting the results as nip width against the square root of pressure per lineal inch from 25 to 250 pounds, straight lines were obtained for each of the different conditions of plasticity from 9 to 76. (Fig. 1.)

In other words, the fundamental law was found that with any plasticity: "The nip width increases directly with the square root of the pressure in pounds per lineal inch."

It also was found that: "The nip width increases directly with the roll plasticity."

4. Thickness of Roll Covering. Results of tests showed that the nip width increases directly with the thickness of the roll covering.

In reference to the distribution of pressure across the nip width, according to Rees and Wilson, "from theories of plasticity it can be shown that the pressure at any given point in the nip width may be related to the total pressure per lineal inch by the following equation:

$$P = \frac{2P}{3.1416 \times a^2} \sqrt{a^2 - x^2}$$

where P = the pressure (lb. per sq.in.) at any given point in the nip width.

P = total pressure—pounds per lineal inch
a = one half the nip width
x = distance (inches) of the given point from the center of the nip width

The curves in Figs. 2 and 3 show the distribution of pressure per square inch of nip area with rolls of two plasticities 38 and 62 under 100 pounds and 300 pounds total pressure per lineal inch.

Under the two pressures we find the following results:

PLASTICITY 38

	100 lb. per lineal inch	300 lb. per lineal inch
Total nip width, inches.....	0.830	1.440
Ave. pressure per sq. in., lb.....	120.5 lb.	208.5 lb.
Max. pressure per sq. in., lb.....	153.0 lb.	285.5 lb.

PLASTICITY 62

Total nip width, inches.....	1.180	2.040
Ave. pressure per sq. in., lb.....	84.7 lb.	147.0 lb.
Max. pressure per sq. in., lb.....	108.5 lb.	187.0 lb

As the web enters the nip, the pressure per square inch increases to a maximum during the first half of the nip width and returns again to zero during the second half.

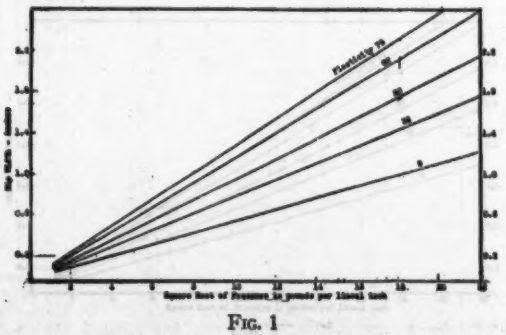


FIG. 1
Relation between Nip Width and Pressure Pound Per Lineal Inch-Constant Thickness of Rubber Varying Hardness-Plasticity ¾ Inch Ball. (From Kenwood Bulletin No. VIII)

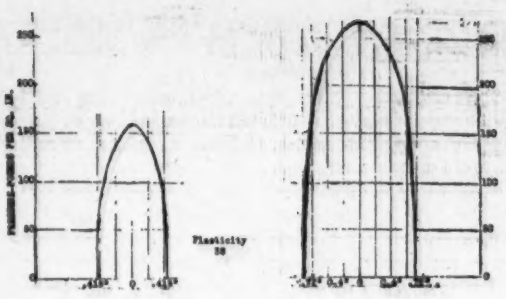


FIG. 2
Distribution of Pressure in the Nip Area

Pressure of Nip Area

Having reviewed the correlation of the various roll factors of which nip width is a function, we shall now consider the first of the elements of operation influencing water removal by a press.

The total weight per lineal inch of nip being determined and the nip width being known, the average pressure per square inch of nip area can be canculated. From the equation previously referred to, the maximum pressure per square inch and the distribution of pressure can also be calculated. In the studies (of plain presses) by Rees and Wilson where the same pressure per lineal inch was used and the same speed, they found that the dryness of the sheet after pressing varied directly with the hardness of the two press rolls.

In the case of two rolls of unequal hardness — as a metal or stone roll and a rubber-covered roll, the drier sheet was obtained when the harder of the two operated in the top position.

The result is interesting because it represents the general papermaking practice and as it happens this placing of the hardness effects assists also to conserve the life of the felts.

On paper machines the diameter of the press rolls is governed largely by the width of the machine, or in other terms the length of the rolls, so as to minimize the tendency towards deflection. In practice the thickness and plasticity of the roll covering are decided upon when the rolls are supplied or are recovered.

Length of Time Any Part of the Web Is Subjected to Pressure

The time period of pressing of any part of the web is directly proportional to the total width of the nip contacts and inversely proportional to the speed of travel of the web and felt through the presses.

It is the concentration of pressure per unit area and the length of time during which the pressure is applied which together determines the extent to which the water will be forced out of the sheet. The greater

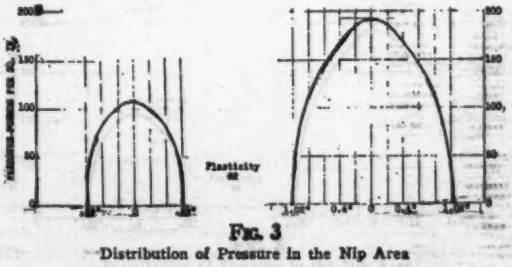


FIG. 3
Distribution of Pressure in the Nip Area

the speed of the sheet the shorter is the time and the lower the speed the longer the time during which the pressure is operative.

With plain presses the resistance of the felt to the backward flow of water through it, out of the nip, is an important factor which in suction presses is largely eliminated.

As the speed is increased, if the pressed sheet is to be kept at the same dryness, it is logical to assume that either the pressure per square inch of contact area must be increased in proportion, or that both the pressure and the nip widths should be increased in proportion to the speed.

In other words, if the machine speed is doubled, either the pressure per square inch of contact area, or the nip contact area at the same pressure per square inch should be doubled, or that both should be increased if the same dryness of sheet is to be maintained.

Type of Presses, Plain or Suction

The chief if not the only essential difference between plain and suction presses is in the way by which the water continuously pressed from the web of paper at the nip contact is removed from the pressure area.

Plain Presses

A typical assembly consists of a rubber-covered bottom roll and a top roll of wood, metal, stone, or of rubber-stone composition.

In operation the movement of the water pressed out is of necessity horizontally backward from the middle of the nip widths. To a large measure the water is forced to pass laterally in the reverse direction through the oncoming sheet and felt, and when the water finally drops from the felt by gravity, it tends to flow down the face of the roll.

Since the movement of the roll is opposite to the direction of the water flow, the water is constantly tending to be carried back into the nip and to maintain a pool at that spot. The limitation of the ability of the water to flow away and also the tendency for the felt to become clogged by the finer fibrous material together result in a definite limit to the possible speed of machines with plain presses. As higher speeds are attempted, to obviate the tendency to crushing at the presses, the pressure has to be reduced with the final result that less water is removed and a correspondingly wetter sheet produced.

With the additional water in the sheet as it goes to the driers, an increased burden is placed upon them making necessary a proportionate increase in the steam required per ton of paper.

In their studies, Rees and Wilson, by measuring the rate of water removal at each (plain) press of a newsprint machine, found that by the use of vacuum boxes on the felts twice to three times as much water was sucked from the felts as flowed directly from the presses. This showed that the felts acted as absorbing media, entering the press in a drier condition than the sheet and leaving it wetter.

This action was particularly noticeable at the last press where the sheet is so low in water that it is difficult and perhaps undesirable to apply sufficient pressure to cause water to flow from the press directly.

On newsprint machines before the application of suction presses, as speeds were increased, three plain presses were found necessary in order to bring the sheet to the dryness desired without crushing.

In general the procedure has been followed of increasing roll hardness and increasing roll pressure from press to press as the sheet proceeds. (*See* Machines 2 to 6, Table II-a.)

When the suction press was developed it was placed at first in the first press position followed by two plain presses. The next step in development was to use suction presses in both first and second press positions followed by a third plain press with a bottom roll of low plasticity and using concentrated pressure on it. (*see* Machines 7 to 11 in Table II-b.)

It was then found that the third plain press did not usually remove sufficiently more water to warrant its use, and in many mills the felt was removed and the former third press operated as a smoothing press. In others this press was removed leaving two suction presses with or without a smoothing press.

Suction Presses

A typical assembly consists of a bottom perforated bronze shell with an interior suction box (suction roll) and a top press roll usually of granite or rubber-stone composition. The bottom roll is frequently covered with 1 inch thickness of rubber of a plasticity of 25 to 35.

TABLE I.—FIRST AND SECOND SUCTION PRESS ROLLS

Diameter of Holes, Number per Square Foot, and Percentage Hole Area

		1st Press			2nd Press					1st Press			2nd Press		
	Speed	Holes	Diam.	%	Holes	Diam.	%		Speed	Holes	Diam.	%	Holes	Diam.	%
1	535	....	.....	...	2000	5/32	26.6	27	1030	1392	7/32	36.3	736	11/64	11.8
2	625	....	.....	...	....	.....	...	28	1035	945	3/16	18.1	1728	3/16	33.1
3	720	....	.....	...	....	.....	...	29	1045	2220	5/32	27.7	1028	11/64	15.5
4	720	....	.....	...	....	.....	...	30	1055	2220	5/32	27.7	1028	11/64	15.5
5	736	1632	5/32	21.6	....	.....	...	31	1070	760	3/16	14.5	945	3/16	18.0
6	750	840	1/8	7.0	....	.....	...	32	1100	1438	5/32	19.2	896	11/64	14.4
7	598	1544	5/32	21.3	863	11/64	13.9	33	1100	....	11/64	33.2	....	11/64	27.4
8	586	1544	5/32	21.3	863	11/64	13.9	34	1118	1440	11/64	23.2	1440	11/64	23.2
9	602	830	7/32	21.7	864	5/32	11.5	35	1120	1440	11/64	23.2	1440	11/64	23.2
10	609	1603	11/64	25.8	863	11/64	13.9	36	1125	1524	5/32	20.3	758	5/32	10.1
11	651	863	11/64	13.9	1596	11/64	25.7	37	1130	1180	5/32	22.6	758	5/32	10.1
12	930	821	3/16	15.7	....	.....	...	38	1130	990	(.180)	17.5	990	(.180)	17.5
13	940	812	3/16	15.4	....	.....	...	39	1135	1180	3/16	22.6	758	5/32	10.1
14	1115	1000	3/32	...	....	.....	...	40	1140	756	11/64	12.1	756	3/16	14.4
15	1160	910	5/32	10.7	....	.....	...	41	1150	945	5/32	12.6	878	1/8	7.5
16	1195	1256	5/32	16.6	....	.....	...	42	1196	1565	3/16	30.1	975	5/32	12.7
17	1200	1272	7/64	8.4	....	.....	...	43	1200	1521	5/32	20.2	1480	5/32	19.7
18	691	720	5/32	9.5	1504	1/8	12.8	44	1200	1008	3/16	19.3	1020	5/32	13.6
19	750	1632	5/32	21.6	832	5/32	11.0	45	1210	1565	3/16	30.1	913	5/32	12.2
20	836	1632	5/32	21.6	1504	1/8	12.8	46	1225	1000	11/64	16.0	1000	11/64	16.0
21	861	1632	5/32	21.6	1504	1/8	12.8	47	1225	950	5/32	12.6	950	5/32	12.6
22	920	1088	3/16	30.3	1581	3/16	20.8	48	1235	960	3/16	18.3	960	11/64	15.5
23	926	1289	.146	15.1	1261	.146	14.6	49	1260	....	3/16	31.8	....	3/16	31.8
24	950	678	5/32	9.0	678	5/32	9.0	50	1280	....	3/16	31.8	....	3/16	31.8
25	985	1524	5/32	20.3	758	5/32	10.1	51	1290	1728	1/8	...	720	5/32	...
26	1010	864	5/32	11.5	1785	11/64	28.8	52	1336	1319	11/64	25.0	945	11/64	15.0

The difference in design of suction presses are the following:

1. Holes—diameter, number per square foot and the percentage of hole area in the total area.
2. Rubber covering, thickness and plasticity.

In operation the differences consist of:

1. Amount of vacuum carried.
2. Pressure applied.
3. Setting of top roll to bottom roll and setting of suction box to the tangent point between the rolls.

In operation, the suction being applied in the pressure zone where the water is pressed from the sheet, the water is immediately drawn through the felt into the holes of the suction roll. At the same time the action obviates the filling up of the felt and, by the air that is drawn through the felt, it is kept clean and open.

Data on forty-eight machines out of the fifty-two newsprint machines which have either first or second suction presses, show the variations in diameter of holes, the number per square foot, and the percentage of hole area in the suction rolls.

The trend is apparent towards 5/32 inch diameter holes, but there is a wide range to the number of holes per square foot and in the percentage hole area as shown by Table I. On machines in the speed range above 1100 f.p.m. the first press has up to twice the number of holes per square foot as in the second press.

Number of Presses

From a theoretical standpoint it would appear that more water would be removed each successive time the sheet is passed through a press. However, from a review of the practice as shown by data on fifty-two newsprint machines, it would appear that the industry in general is satisfied with the degree of water removal obtained with two suction presses.

Where a plain press follows two suction presses as in Machines 7 to 11, inclusive, the additional water removed by the third plain press is 0.1% on four and 0.4% on one of the machines. It may be considered that this is not sufficient to warrant the cost of the extra press and its operation.

TABLE IIa.—SPEED 535 TO 750 F.P.M.

Machines	1	2	3	4	5	6
Speed, f.p.m.	535.0	625.0	720.0	720.0	736.0	750.0
Moisture-free % to 1st	....	12.8	16.7	19.7	....	17.0
1st press	plain	plain	plain	plain	suct.	suct.
Top diam., inches	25⅞	23	24	24	23⅛	22
Material	stone	stone	stone	stone	stone	maple
Bot. diam., inches	19⅞	23	22	24	21⅛	24
Material	R.C.	R.C.	R.C.	R.C.	bronze	R.C.
Plasticity	60	60-65	50	58	....	50
Holes/sq. ft.	....	....	....	....	1632	840
Press. lb./in.	68.1	54.1	120.5	108.0	121.0	30.0
Lb./in./100 f.p.m.	12.7	8.7	16.7	15.0	16.4	4.0
Moisture-free % from 1st	19.3	20.6	21.5	21.0	28.2	28.0
2nd Press	suct.	plain	plain	plain	plain	plain
Top diam., inches	27½	23	25	25	22⅞	22
Material	stone	stone	R.C.	stonite	stone	stone
Bot. diam., inches	21⅛	23	21	24	19⅛	18⅛
Material	bronze	R.C.	R.C.	R.C.	R.C.	R.C.
Plasticity	....	60-65	54	59	(20-22 A)	50
Holes/sq. ft.	2000	....	....	....	....	....
Press. lb./in.	140.4	54.1	172.5	119.0	270.0	242.0
Lb./in./100 f.p.m.	26.2	8.7	23.6	16.5	36.5	32.5
Moisture-free % from 2nd	31.0	27.6	28.3	23.5	31.9	35.0
3rd Press	plain	plain	plain	plain	plain	plain
Top diam., inches	28	23	24	24	21⅛	18
Material	stone	brass	brass	brass	stone	C.I.
Bot. diam., inches	21⅞	23	22	24	20⅞	18⅛
Material	R.C.	R.C.	R.C.	R.C.	R.C.	R.C.
Plasticity	45	60-65	57	56	(20-21 A)	50
Press. lb./in.	119.5	52.8	178.5	149.0	121.0	250.0
Lb./in./100 f.p.m.	22.3	8.4	24.7	20.7	16.5	33.3
Moisture-free % from 3rd	31.1	28.1	30.5	30.5	32.0	36.5
Total press. lb./in.	328.0	161.0	471.5	376.0	512.0	522.0
Lb./in./100 f.p.m.	61.2	25.8	65.0	52.2	69.4	69.8
Water, lb./ton	3920	4530	4030	4030	3750	3040
Steam, lb./ton	5480	6370	5640	5640	5250	4260

TABLE IIb.—SPEED 598 TO 651 F.P.M.
First and Second Suction, Third Plain

Machines	7	8	9	10	11
Speed, f.p.m.	598	586	602	609	651
Moisture-free % to 1st	....	....	....	....	11.4
1st press	suct.	suct.	suct.	suct.	suct.
Top diam., inches	22⅛	23⅞	23⅛	24⅛	24⅞
Material	stone	stone	wood	stone	stone
Bot. diam., inches	24⅞	24⅛	23⅛	24⅛	24⅞
Material	R.C.	R.C.	R.C.	R.C.	R.C.
Plasticity	36	36	31	33	33
Holes/sq. ft.	1544	1544	830	1603	863
Press. lb./in.	148.0	163.1	84.1	105.9	90.7
Lb./in./100 f.p.m.	24.8	27.8	14.0	17.4	13.9
Moisture-free % from 1st	31.2	30.0	25.2	27.1	29.8
2nd Press	suct.	suct.	suct.	suct.	suct.
Top diam., inches	27¾	27⅛	26½	23¾	21⅝
Material	stone	stone	stone	stone	stone
Bot., diam., inches	24⅞	24⅞	24⅛	23½	24⅞
Material	R.C.	R.C.	R.C.	R.C.	R.C.
Plasticity	42	42	26	39	36
Holes/sq. ft.	863	863	864	863	1596
Press. lb./in.	202.1	181.0	172.3	179.8	138.8
Lb./in./100 f.p.m.	33.8	30.9	28.6	29.6	21.6
Moisture-free % from 2nd	35.4	34.3	33.0	31.8	34.1
3rd Press	plain	plain	plain	plain	plain
Top diam., inches	23¾	23¾	26⅞	23⅞	24½
Material	brass	brass	stone	brass	stone
Bot. diam., inches	27½	27½	26⅞	23⅞	24⅞
Material	R.C.	R.C.	R.C.	R.C.	R.C.
Plasticity	44	44	31	48	41
Press. lb./in.	104.7	92.6	139.5	90.3	112.3
Lb./in./100 f.p.m.	17.5	15.8	23.2	14.8	17.3
Moisture-free % from 3rd	35.5	35.4	33.1	31.9	34.5
Total press. lb./in.	454.7	436.7	395.9	376.0	341.8
Lb./in./100 f.p.m.	76.1	74.5	65.8	61.8	52.6
Water, lb./ton	3180	3200	3560	3770	3330
Steam, lb./ton	4460	4480	4980	5280	4670

TABLE IIc.—SPEED 930 TO 1200 F.P.M.
First Suction, Second Plain

Machines	12	13	14	15	16	17
Speed, f.p.m.	930	940	1115	1160	1195	1200
Moisture-free % to 1st	20.7	18.8	18.4	16.4	17.9	18.7
1st Press	suct.	suct.	suct.	suct.	suct.	suct.
Top diam., inches	24¾	25	25⅛	28	26⅞	27½
Material	stonite	R.C. (33)	stonite	R.C. (40)	stonite	stonite
Bot. diam., inches	26	30	27⅞	32	32	32
Material	bronze	bronze	R.C.	bronze	R.C.	R.C.
Plasticity	....	....	36	....	20.0	32
Holes/sq. ft.	821	812	1000	910	1256	1272
Press. lb./in.	48.0	227.0	64.4	120.1	212.0	186.0
Lb./in./100 f.p.m.	5.2	24.2	5.8	10.4	17.7	15.5
Moisture-free % from 1st	27.7	32.5	30.9	32.7	31.0	29.6
2nd Press	plain	plain	plain	plain	plain	plain
Top diam., inches	24	25⅛	24	28	26⅛	27⅛
Material	brass	stone	brass	stonite	stonite	stone
Bot. diam., inches	24½	25⅛	26	32	25⅛	31¾
Material	R.C.	R.C.	R.C.	R.C.	R.C.	R.C.
Plasticity	45–48	50–55	38	48	50–55	50–55
Holes/sq. ft.	....	....	....	....	....	....
Press. lb./in.	290.0	159.0	160.5	143.3	157.0	120.0
Lb./in./100 f.p.m.	31.2	16.9	13.9	12.3	13.1	10.0
Moisture-free % from 2nd	32.1	32.5	31.0	34.6	31.0	29.6
Total press. lb./in.	338.0	386.0	224.9	263.4	369.0	306.0
Lb./in./100 f.p.m.	36.4	41.1	19.6	22.7	30.8	25.5
Water, lb./ton	3750	3660	3930	3320	3930	4220
Steam, lb./ton	5250	5130	5510	4650	5510	5900

It is of interest, however, to mention the triple-roll suction press in the second-press position on the new machines installed during the year at Great Northern Paper Company, Millinocket, Maine. With this equipment it is said that, at machine speed of 1100 f.p.m., the water in the sheet to the driers is reduced to 59% leaving the sheet 41% dry fiber content.

At this figure the water to be evaporated to bring the sheet to 8% water when dried would be 2488 pounds per ton of paper and at 1.4 pounds of steam per pound of water the theoretical quantity of steam would be 3480 pounds per ton of paper.

The Press Felts, Their Structure, Porosity, and Absorbency

As Rees and Wilson showed, on plain presses the press felts are an important factor in water removal and these investigators by their studies very greatly improved the economy of water removal.

With the advent of the suction press, while some

TABLE IId.—SPEED 691 TO 985 F.P.M.
First and Second Suction

Machines	18	19	20	21	22	23	24	25
Speed, f.p.m.	691	750	836	861	920	926	950	985
Moisture-free % to 1st	....	....	....	....	17.4	21.1	....	18.7
1st Press	suct.	suct.	suct.	suct.	suct.	suct.	suct.	suct.
Top diam., inches	23⅛	23¾	26	25⅛	24	28	28	28
Material	stone	stone	stone	stone	stone	stone	stone	stone
Bot. diam., inches	24¼	24¾	25	24⅜	24	36	28	32
Material	bronze	bronze	bronze	bronze	R.C.	R.C.	R.C.	bronze
Plasticity	....	....	....	....	30	30	32	....
Holes/sq. ft.	720	1632	1632	1632	1088	1289	678	1524
Press. lb./in.	73.0	69.0	107.0	102.0	58.0	82.0	83.0	89.8
Lb./in./100 f.p.m.	10.5	9.2	12.8	11.9	9.2	8.9	8.7	9.1
Moisture-free % from 1st	27.6	27.6	29.3	29.0	26.0	30.0	25.0	28.2
2nd Press	suct.	suct.	suct.	suct.	suct	suct.	suct.	suct.
Top diam., inches	23¾	23 56/64	26	23⅛	24	30	28¼	32
Material	stone	stone	stone	stone	stone	stone	stone	stone
Bot. diam., inches	26¾	24⅛	27	26⅛	30	36½	28¼	32
Material	R.C.	bronze	R.C.	bronze	R.C.	R.C.	R.C.	bronze
Plasticity	(A-21-22)	....	(A-16-17)	....	34	30	32	....
Holes/sq. ft.	1504	832	1504	1504	1581	1261	678	758
Press. lb./in.	69.3	81.5	121.0	142.0	130.0	91.0	287.0	111.1
Lb./in./100 f.p.m.	10.0	10.9	14.5	16.5	14.1	9.9	30.2	11.2
Moisture-free % from 2nd	31.5	31.8	33.4	32.0	32.0	33.2	33.0	32.2
Total press. lb./in.	142.3	150.5	228.0	244.0	188.0	173.0	370.0	200.9
Lb./in./100 f.p.m.	20.5	20.1	27.2	28.3	20.5	18.7	38.9	20.3
Water, lb./ton	3840	3780	3510	3750	3750	3540	3570	3720
Steam, lb./ton	5380	5300	4910	5250	5250	4960	5000	5200

change in the structure of the felt was necessary, it is safe to say that the felt became a much less important factor. By the action of the suction press the felt tends to maintain its efficiency throughout most of its life. At first the effect of the suction press was to shorten the felt life, but with rubber-covered suction press rolls this difficulty was removed.

TABLE IIe.—SPEED 1010 TO 1070 F.P.M.
First and Second Suction

Machines	26	27	28	29	30	31
Speed, f.p.m.	1010	1030	1035	1045	1055	1070
Moisture-free % to 1st	....	....	18.3	18.5	18.4	16.7
1st press	suct.	suct.	suct.	suct.	suct.	suct.
Top diam., inches	21½	21½	24	27½	28	28
Material	stone	stone	stone	stone	stone	stone
Bot. diam., inches	24¼	21½	36	34	34	30
Material	R.C.	bronze	R.C.	bronze	bronze	bronze
Plasticity	37	....	39	....	....	....
Holes/sq. ft.	864	1392	945	2200	2200	760
Press. lb./in.	93.5	68.3	114.3	89.5	86.1	146.0
Lb./in./100 f.p.m.	9.3	6.6	11.0	8.6	8.2	13.6
Moisture-free % from 1st	28.8	25.4	28.3	30.7	30.2	29.9
2nd Press	suct.	suct.	suct.	suct.	suct	suct.
Top diam., inches	25¾	25¾	28	26	26	28
Material	stone	stone	stone	stone	stone	stone
Bot. diam., inches	29⅛	27⅜	36	30	30	32
Material	R.C.	R.C.	R.C.	bronze	bronze	R.C.
Plasticity	36	35	30	....	....	32
Holes/sq. ft.	1785	736	1728	1028	1028	945
Press. lb./in.	151.6	166.3	136.0	85.4	94.5	160.0
Lb./in./100 f.p.m.	15.0	16.0	13.1	8.2	9.0	15.0
Moisture-free % from 2nd	32.6	32.6	32.3	33.1	33.0	29.9
Total press. lb./in.	245.1	234.6	250.3	174.9	180.6	306.0
Lb./in./100 f.p.m.	24.3	22.6	24.1	16.2	17.2	28.6
Steam, lb./ton	5100	5100	5180	4980	5000	5820
Water, lb./ton	3640	3640	3700	3560	3570	4150

Press Sections on Newsprint Machines

Through the cooperation of mills in the News Print Service Bureau, data on a large number of newsprint paper machines in United States and Canada were collected.

In Table II are listed fifty-two of the paper machines arranged in order of speed from 535 to 1336 f.p.m. There are various arrangements of plain and suction presses which are classified in Table II as follows:

Number of Machines	1st press	2nd press	3rd press
1—(No. 1)	plain	suction	plain
3—(No. 2, 3, 4)	plain	plain	plain
2—(No. 5, 6)	suction	plain	plain
5—(No. 7 to 11)	suction	suction	plain
6—(No. 12 to 17)	suction	plain	none
35—(No. 18 to 52)	suction	suction	none

Bronze and Rubber-Covered Suction Press

	1st Press	2nd Press
Bronze	31	13
Rubber-Covered	17	28
Machines	48	41

Of forty-eight machines with suction first press, thirty-one are plain bronze and seventeen rubber-covered, while of forty-one machines with suction second press thirteen are bronze and twenty-eight rubber-covered.

The data on the individual machines include the diameter and material of top and bottom press rolls and, where rubber-covered, the plasticity; for the suction rolls are given the number of holes per

TABLE IIf.—SPEED 1100 TO 1196 F.P.M.
First and Second Suction

Machines	32	33	34	35	36	37	38	39	40	41	42
Speed	1100	1100	1118	1120	1125	1130	1130	1135	1140	1150	1196
Moisture-free % to 1st	18.0	....	18.5	18.5	15.4	19.8	....	15.6	18.0	18.6	....
1st Press	suct.	suct.	suct.	suct.	suct.	suct.	suct.	suct.	suct.	suct.	suct.
Top diam., inches	28	28	28	28	28	28	28	28	28	28	25⅛
Material	stone	stone	stone	stone	stone	stone	stone	stone	stone	stone	stone
Bot. diam., inches	34	34	32	32	33¾	32	32	32	30	34	29½
Material	bronze	bronze	bronze	bronze	R.C.	bronze	bronze	bronze	bronze	bronze	bronze
Plasticity	....	....	....	....	A-10	....	....	....	....	....	....
Holes/sq. ft.	1438	....	1440	1440	1524	1180	990	1180	756	946	1565
Press. lb./in.	125.0	95.0	134.0	129.0	86.4	64.2	77.0	64.2	52.2	72.0	71.1
Lb./in./100 f.p.m.	11.3	8.6	12.1	11.5	7.7	5.7	6.8	5.7	4.6	6.3	5.9
Moisture-free % from 1st	25.0	28.5	27.8	27.8	30.8	29.7	....	28.6	27.0	28.0	29.1
2nd Press	suct.	suct.	suct.	suct.	suct.	suct.	suct.	suct.	suct.	suct	suct.
Top diam., inches	28	28	28	28	32	32	28	32	28	28	25⅛
Material	stone	stone	RC-20.4	RC-24.5	stone	stone	stone	stone	stone	stone	stone
Bot. diam., inches	34	36	32	32	33¾	32	34	32	34	36	27⅛
Material	R.C.	R.C.	bronze	bronze	R.C.	bronze	R.C.	bronze	R.C.	R.C.	bronze
Plasticity	25–30	....	....	....	A-10	....	32	....	25	23	....
Holes/sq. ft.	896	....	1440	1440	758	758	990	758	756	878	975
Press. lb./in.	95.0	136.0	135.0	145.0	117.5	93.5	95.0	100.2	138.8	120.0	131.2
Lb./in./100 f.p.m.	8.6	12.3	12.2	13.0	10.4	8.3	8.4	8.8	12.1	10.4	10.9
Moisture-free % from 2nd	30.5	33.4	30.8	30.7	33.5	32.0	30.4	31.9	30.0	33.3	33.2
Total press. lb./in.	220.0	231.0	269.0	274.0	203.9	157.7	172.0	164.4	191.0	192.0	202.3
Lb./in./100 f.p.m.	20.0	21.0	24.3	24.5	18.1	14.0	15.2	14.5	16.7	16.7	16.8
Water, lb./ton	4030	3510	3970	4000	3490	3750	4050	3770	4130	3520	3540
Steam, lb./ton	5640	4910	5560	5600	4890	5250	5690	5290	5790	4930	4960

square foot, their diameter, and the percentage hole area to the total suction roll area.

The pressure in pounds per lineal inch of roll is given and the pounds per lineal inch per 100 f.p.m. speed are calculated for each press, and also the total for all the presses.

As for the sheet condition, the moisture-free percentage to the first press is shown for twenty-seven of the fifty-two machines and for all the moisture-free percentage from each of the presses and to the driers.

Due allowance being made for the possible inaccuracies of the test figures, it is of interest to note the results of the different classes of press arrangements and the superiority in water removal ability of suction presses over plain presses.

Comparing machines with different combinations of plain and suction presses, at the same time taking into account the speed and the total pressure on all the presses, in pounds per lineal inch per 100 foot of speed, the superior dryness of the sheet may be noted with suction presses as against plain presses in same position:

Machine	Speed, f.p.m.	Presses 1	2	3	Total Pressure lb./lin. in. /100 ft.	Moisture-free % presses
1	535	plain	suction	plain	61.2	31.1
8	586	suction	suction	plain	74.5	35.4
7	598	suction	suction	plain	76.1	35.5
9	602	suction	suction	plain	65.8	33.1
10	609	suction	suction	plain	61.8	31.9
2	625	plain	plain	plain	25.8	28.1
11	651	suction	suction	plain	52.6	34.5
3	720	plain	plain	plain	52.2	30.5
4	720	plain	plain	plain	65.0	30.5
5	736	suction	plain	plain	69.4	32.0
6	750	suction	plain	plain	69.8	36.5
12	930	suction	plain	....	36.4	32.1
13	940	suction	plain	....	41.1	32.5
14	1115	suction	plain	....	19.6	31.0
15	1160	suction	plain	....	22.7	34.6
16	1195	suction	plain	....	30.8	31.0
17	1200	suction	plain	....	25.5	29.6

Comparing machines in the different ranges of speed where they are equipped with two suction presses, it may be seen that as the speed increases, the pressure in pounds per lineal inch per 100 foot of speed decreases and at the same time the sheet going to the driers becomes wetter. In other words as the machine speed increased, the pressure per lineal inch has not been increased in proportion. This is illustrated in the graphs in Fig. 4 in which are shown the total pressure per lineal inch per 100 foot of speed for each machine with the corresponding figure of the theoretical steam required to dry a ton of paper to 8% water content.

Speed range of paper machines	to 1st Press Moisture-free, %	1st Press Lb. lineal in. per 100 ft.	1st Press Moisture-free % from press	2nd Press Lb. lineal in. per 100 ft.	2nd Press Moisture-free % from press	Total Lb. lineal in. per 100 ft.	Theoretical Steam req. per ton
598- 651	14.2	19.6	28.6	28.9	33.6	48.4	4,850
691- 985	19.1	10.0	27.8	14.7	32.4	24.6	4,910
1010-1070	18.0	9.7	28.8	11.7	32.2	22.2	5,200
1100-1196	17.8	7.8	28.2	10.5	31.8	18.3	5,300
1200-1336	18.7	7.5	27.4	9.9	32.2	17.4	5,200

Data on the amount of vacuum carried on the suction presses were not collected nor on the volume of air per unit area evacuated through the vacuum pumps, so that it can only be conjectured that these as well as the porosity and absorbency of the felts are important factors in the operation of suction presses.

Among the data collected was the felt life factor in terms of the average tons of paper made per pound of felt. Segregating the plain bronze from the rubber-covered suction presses we have the following:

	1st Press Bronze	1st Press Rubber Covered	2nd Press Bronze	2nd Press Rubber Covered
No. of Machines	31	15	13	26
Ave. lb. lineal in./100 f.p.m.	9.0	13.1	11.7	14.8
Moisture-free % from press	25.0	28.7	31.8	32.5
Felt life t./lb.	11.1	16.0	13.3	17.6

With rubber-covered suction presses the average pressure in terms of pounds per lineal inch per 100 foot of speed is 30 to 40% greater than with those of plain bronze.

As a result the rubber-covered suction press delivers a sheet with nearly 3% less water and shows an increase in felt efficiency of 30 to 40% against plain bronze presses.

Economy of Water Removal—Presses vs. Driers

The statement which appears in volume 5 of the textbooks (Manufacture of Pulp and Paper), that it costs twelve times as much to remove water by the heat of the driers as it does by mechanical pressure is only partly true. It is doubtless correct to the point where the water content of the sheet is more than perhaps 70%. To quote further the qualifying paragraphs from volume 5:

"It is extremely difficult to dry paper or pulp by mechanical pressure where it has less than 60% of contained water."

Even between 70% and 60%, the relative economy of presses and driers depends on such factors as the cost of steam power, felts and fixed charges on pressing equipment.

TABLE IIg.—SPEED 1200 TO 1336 F.P.M.
First and Second Suction

Machines	43	44	45	46	47	48	49	50	51	52
Speed, f.p.m.	1200	1200	1210	1225	1225	1235	1260	1280	1290	1336
Moisture-free % to 1st	....	18.5	....	....	....	....	....	....	....	19.0
1st Press	suct.	suct.	suct.	suct.	suct.	suct.	suct.	suct.	suct.	suct.
Top diam., inches	28	28	26 1/2	30	30	28	32	32	28	28
Material	stone	stone	stone	stone	stone	stone	stone	stone	stone	stone
Bot. diam., inches	32	34	29 1/2	36	38	32	36 1/2	38	34	32
Material	bronze	bronze	bronze	bronze	R.C.	bronze	bronze	R.C.	bronze	bronze
Plasticity	....	....	....	....	21–24	....	....	13	....	....
Holes/sq. ft.	1521	1411	1565	1000	950	960	....	....	1728	1519
Press. lb./in.	86.0	96.0	70.6	92.0	109.0	85.0	110.0	132.2	67.4	83.0
Lb./in./100 f.p.m.	7.2	8.0	5.8	7.5	8.9	6.9	8.7	10.3	5.2	6.2
Moisture-free % from 1st	29.4	27.4	27.9	27.2	27.2	26.9	30.3	30.6	26.1	21.2
2nd Press	suct.	suct.	suct.	suct.	suct.	suct.	suct.	suct.	suct.	suct.
Top diam., inches	28	28	25 3/4	28	30	30	32	32	28	28
Material	stone	stone	stone	stone	stone	stone	stone	stone	stone	stone
Bot. diam., inches	34	34	29 1/2	36	38	34	38	38	34	34
Material	R.C.	bronze	R.C.	bronze	R.C.	R.C.	R.C.	R.C.	R.C.	R.C.
Plasticity	....	....	38.1	....	20–23	28	....	13	25–30	20
Holes/sq. ft.	1480	756	913	1000	950	960	....	....	720	945
Press. lb./in.	104.0	96.0	183.1	117.0	109.0	150.0	132.7	133.5	67.4	147.0
Lb./in./100 f.p.m.	8.7	8.0	15.1	9.5	8.9	12.1	10.5	10.4	5.2	11.0
Moisture-free % from 2nd	33.3	30.2	33.0	31.2	31.2	31.9	33.9	33.8	30.4	33.4
Total press. lb./in.	190.0	192.0	253.7	209.2	218.0	235.0	242.7	265.7	134.8	230.0
Lb./in./100 f.p.m.	15.8	16.0	21.0	17.0	17.8	19.1	19.2	20.7	10.4	17.2
Water, lb./ton	3520	4090	3570	3900	3900	3770	3430	3440	4050	3510
Steam, lb./ton	4930	5720	5000	5460	5460	5290	4800	4820	5680	4910

In the list of machines, Table II, the five (No. 7 to 11) have a third plain press following two suction presses. The sheet condition entering the press section is not given but 18% dry may be assumed. Leaving the first press the sheet averages 28.6% for the five machines, while leaving the second suction press it averages 33.7%. This is a high figure to be accounted for by the relatively slow average speed of 609 f.p.m. and very high pressure per lineal inch on both presses. The average pressure per lineal inch per 100 foot of speed is 48.1 pounds.

Leaving the third plain press the sheet is brought to 34.1% dry, an increase of only 0.4% with an additional pressure of 66.2 pounds per lineal inch per 100 foot of speed.

At the average speed of 609 f.p.m., the rate of production of 32 pounds newsprint is 779.5 pounds per inch of trim per 24 hours.

A tabulation of the amounts of water removed at each press is as follows:

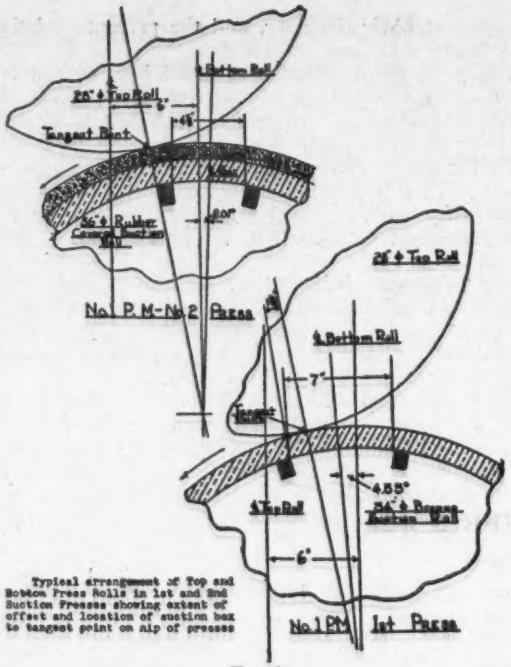
	1st	2nd	3rd	Driers
Water content of sheet to	82.0	71.3	66.3	65.9
Water removed %	82.0 — 71.3	71.3 — 66.3	66.3 — 65.9	65.9 — 8.0
Water removed per	82.0 — 71.3	71.3 — 66.3	66.3 — 65.9	65.9 — 8.0
lb. dry fiber	18 28.7	28.7 33.7	33.7 34.1	34.1 92.0
.....	4.55 — 2.48	2.48 — 1.95	1.95 — 1.93	1.93 — .09
.....	2.07	0.53	0.02	1.84
Water removed per ton of paper— 92% dry	3808	975	37	3385

This shows that the operation of the third plain press following two suction presses removed only 37 pounds of water per ton of dry fiber. Assuming a steam requirement of 1.4 pounds steam at 240 deg. F. to evaporate a pound of water on the driers, it would represent a steam usage of 52 pounds per ton of paper. If the steam cost 40 cents per M pounds, a reasonable figure, the extra cost would be only 2.08 cents per ton.

Against this the average felt life on the third presses of the five machines was 53.1 tons of paper per pound of felt. Using an average figure of $2.60 per pound felt this would make a felt cost per ton of paper of 4.9 cents or nearly 2½ times the cost of steam.

This would indicate clearly that a plain press is without advantage for water removal when following two suction presses by which it might reasonably be expected to reduce the water content of the sheet to 68% operating at 1300 f.p.m.

The economy of a second suction press of large



Typical arrangement of Top and Bottom Press Rolls in 1st and 2nd Suction Presses showing extent of offset and location of suction box to tangent point on nip of presses

FIG. 5

diameter with three press rolls such as mentioned previously, would depend on the cost of the equipment and its fixed charges, with the cost of power to drive it, and the vacuum pump that would be required.

With such a press, if the sheet had a water content of 68% as received and delivered it at 64%, 700 pounds of water per ton of paper would be removed. This quantity at 1.4 pounds steam per pound water and 40 cents per M pound steam would represent a saving of 39.2 cents per ton of paper in drying steam.

Against this would be the felt cost, the power cost for the press, and the vacuum pump, and the overhead charges on the equipment.

On a machine making 150 tons of paper per day there would be nearly $60 per day of savings on steam that could be applied to the third press operation.

Where the machine speed had been increased to a point where the drying capacity was the limiting factor, such a press would be a distinct advantage.

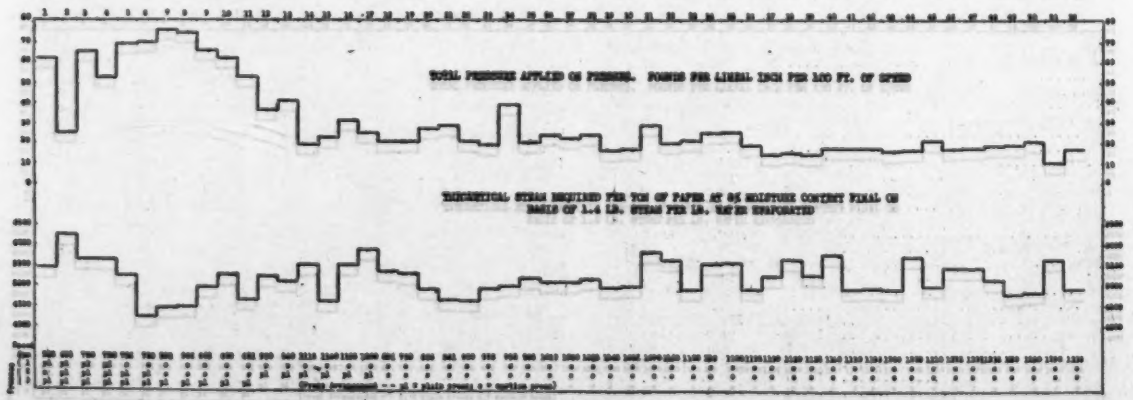


FIG. 4

IMPORTS OF PAPER

NEW YORK IMPORTS

WEEK ENDING AUGUST 22, 1942

SUMMARY

Newsprint ..... 894 rolls

NEWSPRINT

——, ——, ——, 286 rolls.
——, ——, ——, 301 rolls.
——, ——, ——, 307 rolls.

RAGS, BAGGINGS, ETC.

——, ——, ——, 407 bls. cotton linters.
——, ——, ——, 1835 bls. cotton linters.

BONES

——, ——, ——, 408 bags.

BONE GLUE

——, ——, ——, 220 bags bone glue sheets.
——, ——, ——, 393 bags bone glue sheets.

WPB Advises Larger Newsprint Stocks

WASHINGTON, D. C., August 24, 1942—Because many newspapers are apparently carrying only minimum stocks of newsprint, E. W. Palmer, Deputy Chief of the Printing and Publishing Branch, reminded publishers today that the WPB order relaxing inventory restrictions on newsprint, paper and paper products under Priorities Regulation No. 1 will expire September 30.

Mr. Palmer pointed out that publishers who have not taken advantage of the opportunity to acquire large stocks of newsprint during the off-peak transportation season may encounter difficulty in later months when the railroads will be faced with a heavy seasonal burden.

"A shortage of railroad facilities would seriously disrupt the delivery of many of the nearly 6,000 cars of newsprint expected to be transported monthly during the last quarter of the year," he said. Each newspaper publisher should analyze his own newsprint requirements, the method of transportation used in delivering his newsprint, and facilities for storing his newsprint, in order to work out means of filling requirements with the least possible strain on transportation."

Mr. Palmer said that a survey showed that publishers' stocks of newsprint on hand as of July 31 represented 67 days' supply, and stocks in newsprint mills represented an additional 20 days' supply.

To Build Bunkhouses at Woodfibre

Erection of additional accommodation for workers at the Woodfibre, B. C. plant of the British Columbia Pulp and Paper Company, Ltd., 602 West Hastings street, Vancouver, B. C., will be undertaken in the immediate future. The government has secured federal approval of its plan to erect two large bunkhouses at an approximate cost of $30,000.

It is unofficially stated the contract will be awarded to Dominion Construction Company, Ltd., 150 West First avenue, and that building operations will commence at once. A few months ago the Dominion Construction Company finished a similar building program at the Howe sound plant of the pulp and paper company at Port Alice.

New De-Scaling Manual By Oakite

De-scaling water-circulating or water-cooled equipment has long been one of the major maintenance problems confronted by many pulp and paper mills. But due to the war-time necessity of conserving essential mill equipment, shortening shut-down time and increasing efficiency of required maintenance procedures, the removal of lime-scale and rust deposits on a safe, effective basis is more important to mill managers, superintendents, plant engineers and maintenance men today than ever before.

Of particularly timely interest in this connection, is the newly revised and enlarged fourth edition of a 24-page manual just issued by Oakite Products, Inc., New York, which concisely reviews modern, economical methods for safely removing lime-scale and rust deposits from a wide range of water-cooled and water-circulating equipment, such as vacuum pumps, rubber covered suction press rolls, cylinder wires, screen plates, and evaporators. Data is also given on de-scaling Diesel water jackets, lube oil and jacket water coolers and other types of heat exchange equipment where periodic removal of scale and rust deposits is essential to restore normal heat transfer.

In addition, the manual describes how a specially designed scale-dissolving material, Oakite Compound No. 32, not only eliminates the hazards to personnel and equipment so frequently involved with the use of commercial raw acids, but also obviates the need for tedious, time-consuming mechanical methods often required heretofore on many different types of scale and rust removal work.

Copies of this fact-filled, illustrated manual are available upon request to Oakite Products, Inc., 57 Thames street, New York City.

Pennsylvania Notes

PHILADELPHIA, Pa., August 24, 1942—Directors of Pennsylvania Salt Manufacturing Company, during the week elected Francis Boyer as a director to fill a vacancy existing since the death of Samuel D. Warriner last April. Boyer is executive vice president and a director of Smith, Kline & French Laboratories. He is a resident of Plymouth Meeting.

Funeral services for John J. Lobb, former superintendent of the paper mill at Scott Paper Co. were held today. Solemn requiem Mass was celebrated in the Immaculate Heart Church at 10 A. M., followed by interment in St. Thomas Cemetery, Ivy Mill, Pennsylvania. Mr. Lobb, who lived at 1027 Kerlin street, died on Monday last, at Camas, Washington, where he had been assistant to the general manager of the Crown Zellerbach Co. since 1940.

Surviving are his wife, the former Alla Civial; four daughters, Ann L., Margaret J. and Catherine R., all of the Kerlin street address, and Mrs. Edward P. Hayer, 1122 Parker street.

Issue Thilmany-News

"Thilmany News," and employees' house organ, made its initial appearance last week at the Thilmany Pulp and Paper Company, Kaukauna, Wis. It was devoted largely to excerpts of letters from the 109 employees now in war service, and a copy will be mailed to each of them. C. R. Seaborne, vice-president in charge of manufacture, was the originator of the plan. Mrs. Helen Arps Miller is the editor, and Miss Ioan Mayer is her assistant.

New York Paper and Pulp Market Review

Paper Market Relatively Quiet With Prospect of Some Improved Demand Next Month—Pulp Market Is Quiet With Good Demand For Bleached Sulphite—Some Grades of Old Waste Paper Active.

Office of the PAPER TRADE JOURNAL.
Wednesday, August 26, 1942.

The current aggregate volume of sales in the wholesale paper market is comparable to the slack summer periods in 1939 and 1938. Indications of an improvement in some major lines next month, however, are reflected in reports received from many manufacturers' representatives, jobbers, and general paper merchants. The low level of consumption and poor prospects for some important grades of book and printing papers is apparently likely to continue into the future, due to curtailment in advertising and merchandising to speed up the war effort.

The index of general business activity for the week ended August 15 rose to 132.9%, from 132.0% for the preceding week, compared with 131.5% for the corresponding week last year. Paper board production was 1.4% higher.

Paper production for the week ended August 15 was estimated at 79.8%, compared with 99.0% for 1941, with 86.6% for 1940, with 82.9% for 1939, and with 78.0% for the corresponding week for 1938.

Paper board production for the week ended August 15 was 73.0%; compared with 92.0% for 1941, with 73.0% for 1940, with 72.0% for 1939, and with 67.0% for the corresponding week for 1938.

The Office of Price Administration, Washington, D. C., has issued a new "Digests of Interpretations." It contains the OPA price regulations, other than covered by the General Maximum Price Regulation, with some new explanatory data. The following paper, paper products and materials covered by the OPA price schedules are included: No. 30, waste paper; No. 32, paper board sold East of the Rocky Mountains; No. 47, old rope; No. 129 paper, paper products and raw materials for paper making.

Wood Pulp

The chemical wood pulp market is quiet. A good demand is reported for all grades of bleached sulphite and for good grades of unbleached sulphite. The supply of the news grade of unbleached sulphite is reported adequate. Good stocks of sulphate are also reported. Prices are unchanged.

Rags

Mill buying of roofing rags is moderate in a rather limited market. Ceiling prices are reported in several quarters as fairly well maintained.

Buying in new rags is rather slow without important change in demand. The price situation in cuttings is of a nominal nature, No. 1 white shirt cuttings are currently quoted well under maximum prices at 7.00.

Old Rope and Bagging

Demand for old Manila rope continues to absorb about all the limited supplies available. The OPA maximum price of $115.00 per ton is reported being paid.

Trading in scrap bagging is fair. with mill buying apparently on the basis of immediate needs. Prices are unchanged.

Old Waste Paper

Demand for some of the lower grades of paper stock is reported more active at this date. Some reports indicate sales to mills at substantially under OPA maximum prices. Old corrugated containers are currently quoted at .80, No. 1 news at from .40 to .45, and No. 1 mixed paper at from .25 to .30.

Twine

Demand for twine, other than the binder grade, is fair. Prices are moderately firm on most standard brands with certification required on orders for jute twine and rope. This certification is required on orders for agricultural uses, although manufacturers are not limited to the 30% average monthly shipments of 1941, on jute items for agricultural and allied uses.

Pacific Mills Changes

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., August 22, 1942—Important changes in directing personnel of Pacific Mills Ltd., Ocean Falls and Vancouver, B. C., one of British Columbia's biggest pulp and paper organizations, including election to the board of Eric W. Hamber, long a prominent figure in the industrial life of the province and a former lieutenant-governor, were announced recently. Mr. Hamber will replace on the board of directors Frank N. Youngman of Portland, Ore., formerly manager of the company's operations in this territory and more recently in charge of the Oregon division.

Louis Bloch of San Francisco has retired as chairman of the board and Albert Bankus and Mr. Youngman have retired as vice-presidents.

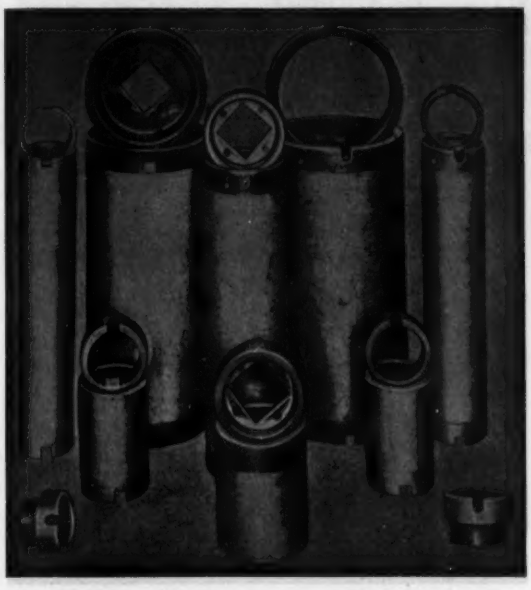
A. B. Martin continues as president of the company, with John A. Young vice-president and treasurer, at the Vancouver office, with H. C. Pim vice-president and J. H. Lawson continuing as secretary.

Pacific Mills operates pulp and paper mills at Ocean Falls and a converting plant in Vancouver. In addition to newsprint and paper specialties, the company is one of the largest producers of kraft paper on the west coast and has been an important factor in the province's export trade.

Cohoes Papers Suspends

[FROM OUR REGULAR CORRESPONDENT]

COHOES, N. Y., August 24, 1942—Cohoes Papers, Inc., has suspended operations but plans to reopen when priority regulations change. It began operations about three years ago and produced paper in a plant on Canvas street. Although the payroll was small it was said that an enlargement was planned as the volume of manufacture increased. Earl A. Crawford, formerly connected with the Cohoes Envelope Company, was president of the concern.



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Straight wound paper cores made in sizes from 2" to 10" inside diameter with any thickness wall required.

Long draw protected slot caps of heavy gauge steel in all standard sizes.

Heavy duty caps with reenforced square hole. This patented feature of reenforcement gives added strength and durability.

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ENGLISH FINISH SUPERCALENDERED
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KRAFT WRAPPING AND KRAFT ENVELOPE
KRAFT LINER BOARD
BLEACHED SULPHITE AND SODA PULP
BLEACHED AND UNBLEACHED KRAFT PULP

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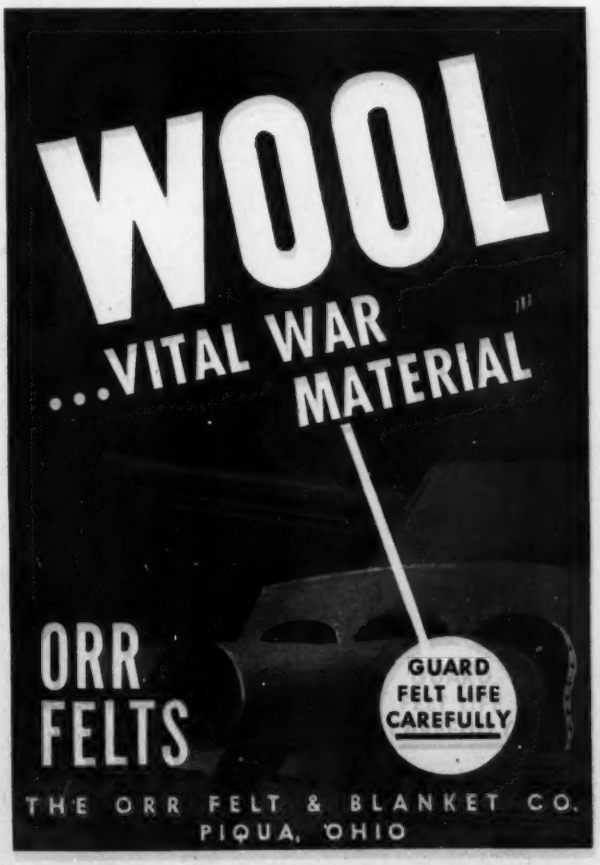
Cass, West Virginia
Charleston, South Carolina



MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL
Wednesday, August 26, 1942.

BLANC FIXE—Quotations on blanc fixe are firm and continue unchanged at prevailing market levels. The pulp is currently quoted at $40 per ton in barrels, at works; the powder is offered at $60 per ton, f.o.b., works. Demand reported fair for the week.

BLEACHING POWDER—Prices on bleaching powder are firm. Supply under allocation control. Bleaching powder is currently quoted at $2.25 per 100 pounds, in drums, at works.

CASEIN—Quotations on casein are higher for the week. Standard domestic casein, 20-30 mesh, is currently quoted at 16½ cents per pound; 80-100 mesh at 17 cents per pound; all prices in bags, car lots. Standard Argentine casein is currently offered at 10 cents per pound, c.i.f. No quotations on French casein.

CAUSTIC SODA—Prices of caustic soda are reported unchanged. Supplies ample. Demand fair for the current week. Solid caustic soda is currently quoted at $2.30 per 100 pounds, flake and ground at $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Quotations on china clay are firm and continue unchanged. Demand reported fair for the current week. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay is quoted at from $12 to $22 per ton, at mines. Imported clay is quoted at from $13 to $25 per long ton, ship side.

CHLORINE—Quotations on chlorine unchanged. Government demand for war use continues heavy. Chlorine is currently quoted at from $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—Quotations on some grades of rosin are higher for the current week. "G" gum rosin is currently quoted at $2.86 per 100 pounds, in barrels, Savannah. "FF" wood rosin is currently quoted at $2.86 per 100 pounds in barrels, New York. Seventy per cent gum rosin size is quoted at $3.24 per 100 pounds, f.o.b., works.

SALT CAKE—Prices on salt cake are firm. Demand reported fair for the current week. Domestic salt cake is currently quoted at $15 per ton in bulk; chrome salt cake at $16 per ton. All prices in car lots, f.o.b., shipping point. Quotations on imported salt cake are nominal at $16 per ton.

SODA ASH—Quotations on soda ash are less firm and continue to conform to prevailing market quotations. Demand moderate. Quotations on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Prices on corn starch continue unchanged for the current week. Pearl is currently quoted at $3.10 per 100 pounds; powdered starch at $3.20 per 100 pounds; all prices in bags, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina are firm. Demand reported fair. The commercial grades are currently quoted at $1.15 per 100 pounds; iron free at from $1.75 to $1.85 per 100 pounds, in bags, car lots, f.o.b., works.

SULPHUR—Prices of sulphur are firm and continue to conform to prevailing market quotations. Annual contracts are currently quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are quoted at $18 per ton.

TALC—Quotations on talc are firm and continue unchanged at prevailing market prices. Domestic talc is currently quoted at from $16 to $21 per ton, at mills. No quotations on imported talc.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	"	—
Kraft—per cwt.—Carload Quantities Zone A, f.o.b. Mill			
Superstandard Wrapping	$5.00	@	—
No. 1 Wrapping	4.75	"	—
Standard Wrapping	4.50	"	—
Standard Bag	4.125	"	—
Tissues—Per Ream—Carlots			
White No. 1	1.12½	"	—
White No. 1 M. G.	1.05	"	—
White No. 1½	1.00	"	—
White No. 2	1.00	"	—
Anti-Tarnish M. G.	.95	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	2.35	"	—
Bleached, Jr.	2.65	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	11.25	@	—
No. 1 Manila Wrapping, 35 lb.	5.50	"	5.75
No. 2 Manila Wrapping, 35 lb.	5.25	"	5.50
Boards, per ton—			
News	*48.00	@	—
Chip	*45.00	"	—
Srl. Mia. Lt. Chip	*60.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*60.00	"	—
Binders Boards	84.00	"	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$40.25@$47.25	$41.40@$48.50
100% Rag	32.20 " 37.75	33.35 " 39.25
85% Rag	.... "	32.20 " 37.75
75% Rag	24.75 " 29.00	25.90 " 30.50
65% Rag	.... "	22.80 " 27.75
50% Rag	18.70 " 22.75	19.90 " 24.25
25% Rag	16.40 " 20.00	17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds	Ledgers
No. 1..	$10.55@$12.75	$11.70@$14.25
No. 2..	9.65 " 11.75	10.80 " 13.25
No. 3..	9.20 " 11.25	10.35 " 12.50
No. 4..	8.90 " 10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Tree Sheet Book Papers—White, Coated Paper.

Delivered in Zone 1:

No. 1 Glossy Coated	$13.65	@	$13.50
No. 2 Glossy Coated	12.40	"	14.00
No. 3 Glossy Coated	11.60	"	13.25
No. 4 Glossy Coated	11.15	"	12.75
No. 1 Antique (watermarked)	10.25	"	11.75
No. 2 Offset	9.60	"	11.00
A Grade E. F.	9.35	"	10.75
A Grade S. & S. C.	9.60	"	11.00
B Grade E. F.	8.85	"	10.25
B Grade S. & S. C.	9.10	"	10.50
C Grade E. F.	8.55	"	9.75
C Grade S. & S. C.	8.80	"	10.00
D Grade E. F.	8.25	"	9.50
D Grade S. & S. C.	8.50	"	9.75

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight to Destination.

Bl. Softwood Sulphite	$76.00		
Unbl. Softwood Sulphite	64.00	@	66.00
Bl. Hardwood Sulphite	73.50		
Unbl. Hardwood Sulphite	63.50		
Bl. Mitscherlich	81.00		
Unbl. Mitscherlich	72.00		
N. Bleached Sulphate	86.00		
S. Bleached Sulphate	79.00		
N. Semi-Bleached Sulphate	42.00		
S. Semi-Bleached Sulphate	75.00		
N. Unbl. Sulphate	73.00		
S. Unbl. Sulphate	63.50		
Bl. Soda	66.00		
Unbl. Soda	62.00		
Groundwood	46.00		

Transportation Allowances Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area)	10.50
West Coast (out area)	16.50
	50%-80% Air Dry Weight
Northeast	$11.50
Lake Central	11.50
Southern	14.00
West Coast (in area)	9.50
West Coast (out area)	15.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$8.50
Lake Central	8.50
Southern	11.00
West Coast (in area)	7.50
West Coast (out area)	13.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum price.

Domestic Rags

New Rags (Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	8.00	@	8.25
Silesias No. 1	4.50	"	4.75
New Unbleached	8.00	"	8.25
Blue Overall	5.75	"	6.00
Fancy	3.00	"	3.25
Washables	2.50	"	2.75
Mixed Khaki Cuttings	2.50	"	2.75
O. D. Khaki Cuttings	3.00	"	3.15

ENGLISH ECCO CLAYS CLAYS

ECCO CLAYS — TRADE MARK

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English China Clays Sales Corporation
551 Fifth Avenue, New York City

More than just a TRADE MARK

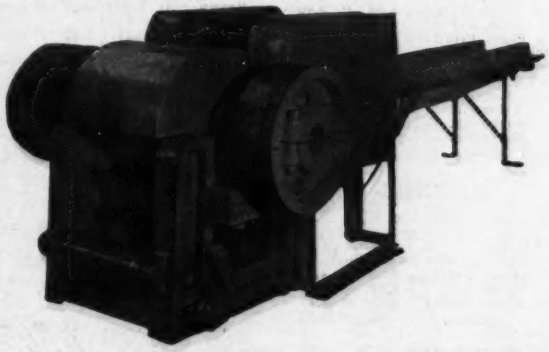
EXCELSIOR KNOX Woolen Co. Camden, Me. FELTS & JACKETS

BUT also a guarantee by men who for 78 years have prided themselves in making finer felts. TO YOU —this is the mark of dependability, longer felt life and greater saving.

KNOX WOOLEN CO.
CAMDEN, MAINE.

IN THE FRONT LINE OF PRODUCTION

Taylor-Stiles Cutters, especially designed and constructed to meet the various needs of paper manufacturers, are part of the equipment of leading paper mills everywhere.



THIS IS NO. 11—"GIANT" RAG CUTTER

rated capacity: 3 to 4 tons of rags an hour. Other types to cut burlap, bagging, rope, jute, etc., with equal efficiency.

Write for description of cutter to meet your victory production needs.

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America's Foremost and Best Equipped Engravers and Manufacturers of

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We have been told that seeing a Johnstone Slitter and Winder for the first time is like meeting someone you recognize, but can't identify. Modern design from the ground up enabled us to break away from the shackles of "we've made it that way for years", with the result that its simplicity of operation is as different as its appearance. We'd like to send you more information.

JOHNSTONE
Engineering & Machine Co.
DOWNINGTOWN, PA.

Old Rags

White, No. 1—			
Repacked	*3.80	"	—
Miscellaneous	*3.20	"	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.65	"	—
Third and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.80	"	—
Roofing Rags—			
No. 1	*1.55	"	—
No. 2	*1.45	"	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.35	"	—
* Old Manila Rope	5.75	"	—

*OPA Maximum Prices.

Foreign Rags

All prices nominal
New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—
No. 4 White Linens	2.25	"	3.25
No. 1 White Cotton	4.25	"	4.75
No. 2 White Cotton	3.25	"	3.75
No. 3 White Cotton	2.50	"	3.00
No. 4 White Cotton	1.90	"	2.20
Extra Light Prints	2.00	"	2.40
Ord. Light Prints	1.75	"	2.15
Med. Light Prints	1.55	"	1.95
Dutch Blue Cottons	2.25	"	2.50
French Blue Linens	3.00	"	—
Checks and Blues	2.00	"	—
Linsey Garments	1.90	"	2.00
Dark Cottons	1.50	"	1.60
Old Shopperies	1.30	"	1.45
New Shopperies	1.45	"	1.50
French Blues	2.25	"	2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.00	@	4.25
Wool Tares, light	4.25	"	4.50
Wool Tares heavy	4.50	"	4.75
Bright Bagging	4.50	"	4.85
Manila Rope—			
Foreign	—	"	—
Domestic	*5.75	"	—
Jute Threads	4.25	"	4.75
Sisal Strings	3.25	"	3.75
Mixed Strings	1.10	"	1.20

*OPA Maximum Price.

Old Waste Papers

(F. o. b. New York)
OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Envelope Cuts	3.12½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines	1.57	"	—
Mixed Books	1.07½	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Mixed Ledger, colored	1.87½	"	—
New Manila Envelope Cuttings, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas	1.85	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	"	—
New 100% Kraft Corrugated Cuttings	2.25	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	1.75	"	—
Old Corrugated Containers	1.00	"	—
Box Board Cuttings	.72½	"	—
White Blank News	1.65	"	—
Overissue News	.85	"	—
No. 1 News	.75	"	—
No. 1 Mixed Paper	.70	"	—

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp	.21	"	—
Fine Polished—			
Fine India	.26	"	—
Unpolished—			
Box	.17¼	"	—
Paper Makers	.17	"	—
Tube Rope	.19	"	—
Wall Paper	.20½	"	—
Wrapping	.23	"	—
Soft Fiber Rope	.19	"	—
Cotton	.25	"	—

(Hard Fiber)

Medium Java	.18	"	—
Mex. Sisal	.16	"	—
Manila	—	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White No. 1	.07½	@	.07½
New White No. 2	.04½	"	.05
Light Silesias	.04½	"	.04¾
Silesias, No. 1	.04	"	.04¼
Black Silesias, soft	.03¾	"	.04
New Unbleached	.07¼	"	.07½
Washable Prints	.03¾	"	.03½
Washable No. 1	.02	"	.02¼
Blue Overall	.04½	"	.05½
Cottons—According to grades—			
Washable shredding	—	"	.01¾
Fancy Percales	.03¼	"	.03½
New Black Soft	.02¾	"	.03
New Dark Seconds	1.75	"	2.00
Khaki Cuttings—			
No. 1 O. D.	.03	"	.03¼
No. 2 Mixed	.02¼	"	.02½
Corduroy	.01¾	"	.02¼
New Canvas	.04¾	"	.05¼
New Black Mixed	—	"	.02½

Domestic Rags (Old)

White No. 1—Repacked	3.80	"	—
White No. 2—Repacked	2.90	"	—
Miscellaneous No. 1	3.20	"	—
Miscellaneous No. 2	2.65	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	—
Repacked	2.20	"	—
Black Stockings—			
(Export)	Nominal		
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	1.55	"	—
Domestic No. 2	1.45	"	—
Roofing Bagging	1.35	"	—
Old Manila Rope	5.75	"	—

Bagging

(F. o. b. Phila.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.00	"	3.50
Sisal Rope	3.75	"	—
Mixed Rope	.75	"	1.00
Scrap—			
No. 1	3.25	"	3.50
No. 2	1.75	"	1.80
Wool Tares, heavy	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila.)
OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
White Blank News	1.65	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Ledger, colored	1.87½	"	—
No. 1 Heavy Books & Magazines	1.57	"	—
Overissue Magazines	1.67½	"	—
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Box Board Cuttings	.72½	"	—
Jute Corrugated Cuttings	.90	"	—
Overissue News	.85	"	—
No. 1 News	1.00	"	—

BOSTON

Old Papers

(F. o. b. Boston)
OPA Maximum Prices

No. 1 Hard White Shavings, unruled	2.87½	@	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.57	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Overissue News	.85	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old Corrugated Containers	1.00	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	4.10	@	4.40
Sisal Rope	4.50	"	5.00
Mixed Rope	1.25	"	1.50
Transmission Rope—			
Foreign	(nominal)		
Domestic	3.00	"	4.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	5.00	"	5.25
Jute Carpet Threads	3.45	"	3.90
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	4.50	"	—
Scrap Sisal	4.50	"	5.00
Scrap Sisal for Shredding	4.75	"	5.25
Wool Tares—			
Foreign	(nominal)		
Domestic	5.00	"	5.75
Aust. Wool Pouches	4.75	"	5.00
New Burlap Cuttings	5.25	"	5.50
Heavy Baling Bagging	4.75	"	5.00
Paper Mill Bagging	2.50	"	3.00
No. 2 Bagging	1.35	"	—

*OPA Maximum Price.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.04½	@	.04¾
Fancy			
New White No. 1	.06½	"	.07¼
New Light Flannelettes	.06	"	.06¼
Canton Flannel, Bleached	.06½	"	.07
Underwear Cutters, Bleached	.06½	"	.06¾
Underwear Cutters, Unbleached	6.50	"	6.75
Silesias No. 1	.06	"	.06¾
New Black Silesias	.03¾	"	.04
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached	.07	"	.07¼
Blue Cheviots	.06	"	—
Fancy	.02¾	"	
Washable	.02¾	"	—
Khaki Cuttings	.03¾	"	.04
O. D. Khaki	.04	"	.04¼
Corduroy	.03½	"	.03¾
New Canvas	.07	"	.07¼
B. V. D. Cuttings	.07¼	"	.08

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—
Miscellaneous	3.20	"	—
White No. 2—			
Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	1.55	"	—
No. 2	1.45	"	—
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A	1.35	"	—
Quality B	1.20	"	—
Quality C	.95	"	—
* Old Manila Rope	5.75	"	—

*OPA Maximum Prices.

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)
OPA Maximum Prices.

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.50	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 White Ledger	2.17½	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Ledger, colored	1.87½	"	—
No. 1 Heavy Books & Magazines	1.57	"	—
White Blank News	1.65	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News	.85	"	—
No. 1 News	.75	"	—
No. 1 Mixed Paper	.70	"	—
No. 1 Roofing Rags	1.55	"	—
No. 2 Roofing Rags	1.45	"	—